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USSR REPORT  
TRANSPORTATION

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## CIVIL AVIATION

### DEPUTY MINISTER ON SECTOR'S TECHNICAL PROGRESS

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 4, Apr 85 pp 2-3

[Article by I. Ye. Mashkivskiy, deputy minister of civil aviation: "Following a Course of Technical Progress"]

[Text] One of the main goals set at the 26th CPSU Congress and subsequent plenums of the CPSU Central Committee, and in the Decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures to Accelerate Scientific and Technical Progress in the National Economy", is the need to unite in practice the advantages of our socialist system and the achievements of the scientific and technical revolution. Therefore, accelerated development of science and technology and introduction of scientific and technical achievements into production are taking on special importance today.

The need to step up scientific and technical progress and increase the effective interaction of science and production certainly applies to civil aviation. Our sector is participating actively in the creation of aircraft equipment and providing the accompanying scientific foundations for its utilization. The sector has at its disposal a powerful production base, large scientific institutions, and a broad network of repair and testing plants. A large contingent of skilled specialists is employed in civil aviation and there is an efficient system for training personnel and improving their skills. The comprehensive program for the sector's development calls for constant improvements in aircraft and ground equipment.

The country's aviation industry, on orders from Aeroflot, is engaged in the development of more economical and efficient modifications of airplanes, helicopters, and engines to replace outdated and worn out models. A great deal of work is done to put new equipment into operation, to improve existing equipment, and to increase the efficiency of air transport.

The IL-86, the first Soviet wide-body airplane, has been flying on Aeroflot routes for more than four years. Its hourly flight productivity exceeds that of other aircraft by a factor of more than 2. The short-distance YaK-42 makes it possible to increase the carrying capacity on short-distance air routes. This year there are plans to put a modified TU-154M into operation; it has more economical engines, which means that its fuel efficiency will be improved. The comfortable AN-28 will be used on local air routes. This will solve the long-standing problem of replacing the veteran AN-2 on passenger and cargo

flights. Work is being done to create new airplanes to be used on major routes that will be more efficient, economical, and comfortable, and that will replace today's fleet of planes.

Helicopters play an important role in the development of hard-to-reach areas in the North, Siberia, and the Far East. They are also becoming more and more important in carrying out construction and installation work and agro-chemical operations. For this reason a great deal of attention is also being given to the development and renewal of the helicopter fleet. For example, this year a set of tests on the MI-26 and KA-32 is being completed, and the designs of these helicopters contain some important possibilities.

As a rule, the development of new technology requires improved methods and means for its exploitation, technical servicing, and sometimes a revision of some remaining notions about technological processes. For example, when the IL-86 airplane was put into service, a new approach was worked out for diagnosing the technical condition of its units and assemblies, which included on-board multichannel recording equipment. Sections for interpreting flight information at aircraft technical bases are being provided with additional equipment. The analysis system now in use makes it possible, with the help of a computer, to diagnose the condition of the airplane's most important systems. Additional methods of nondestructive monitoring have been introduced, including optical, ultrasound, and vortical current methods.

Unfortunately, examples of a different nature can also be cited which indicate shortsightedness and a perfunctory approach to the development of new technology. For instance, managers and specialists at a number of sectorial administrations under the ministry and aviation enterprises are guilty of underestimating the importance of a comprehensive approach to putting new aircraft into operation. Specifically, difficulties were encountered in expanding the geographical use of the wide-body IL-86. Even though plans were drawn up ahead of time, when a check was made it turned out that some airports were not ready to put this plane into operation. In the majority of cases this was not due to some objective technical difficulties, but rather it was the result of a basic lack of foresight. This is the only possible explanation, for example, for the failure of a number of airports to provide facilities for handling a larger number of passengers, create holding areas for the planes, taxiways, and so on.

The utilization of the IL-86 plane with its low engines makes stricter demands on the parameters of airport surfaces and take-off and landing strips. However, reliable original data are not always available for determining these parameters. In connection with this, the "Aeroprojekt" State Planning and Scientific Research Institute is faced with a large amount of work aimed at studying the condition of the strips and determining their actual parameters.

Sectorial science is to play a large role in the creation and assimilation of new aviation equipment. On the basis of suggestions from our scientists, technical goals for future airplanes and helicopters are set, and the scientists participate in the further development of designs and model testing. It would not be an exaggeration to say that the scientific forces of civil aviation have contributed a great deal to achievements in the domestic aviation

industry. But there are still reserves in this area for increasing the efficiency and quality of work. We are not always satisfied with the time it takes to carry out preliminary combined technical and economic studies, and with the depth of these studies, before goals are set for development. As a result, sometimes solutions are offered that are lacking sufficient economic substantiation and can hardly be justified from the standpoint of air transport technology.

The accompanying scientific work at subsequent stages also leaves something to be desired. In our view, there should be closer contacts between scientists and designers and people directly engaged in production. This would make it possible to make prompt corrections in unsuccessful technical decisions that lead to various limitations at the initial stage of exploitation and to the need to make additional adjustments. A closer bond between scientific and engineering and design work represents a major reserve for increasing the effectiveness of the creative search and for stepping up the incorporation of scientific achievements into production.

The organization of technical service and repair determines to a great extent the successful, uninterrupted operation of aircraft equipment. Aviation engineering services and aircraft repair plants ensure that the airplane and helicopter fleet is in good working order. The idle time spent by aircraft on maintenance and repair is steadily declining: in the majority of cases this indicator is below the norm. Work is being done constantly to extend the resources of airplanes, helicopters, aircraft engines, and various assemblies. Progressive methods of technical maintenance and repair are being introduced, and improvements are being made in the diagnostic equipment and means for nondestructive monitoring of the aircraft. The best results have been achieved at the Leningrad and Moscow transportation administrations and the International Air Services Central Administration. But this is no reason to be complacent. Engineering services at some airports did not make all the necessary preparations for working with the new equipment, which is resulting in serious extra costs. One example of this can be seen in the shortcomings in the work done at the Tashkent Airport aircraft technical base.

Aircraft repair plants are also guilty sometimes of violations of technical discipline. The result of this is a decline in the flying and technical characteristics of the equipment coming out of repair, and in some cases, unwarranted economic losses. The collectives at plant No 403 and plant No 421, for example, deserve criticism for this type of work.

Further advancements in our sector depend to a great extent on skillful and efficient use of physical resources, particularly fuel and power resources. Decisions of the ministry's Collegium and directives from B. P. Bugayev, minister of civil aviation, call for adherence to a strict policy of economy with regard to these resources, especially aircraft fuel.

A comprehensive program for fuel economy in the sector has been drawn up and is being carried out successfully. The scientific research work carried out within the framework of this program and practical application of the results of this work at airports are the foundation for the reduction in the consumption of aircraft fuel. For example, in the first four years of the 11th



Five-Year Plan the reduction in expenditures on transport operations averaged 8 percent, with a more than 10 percent decrease in the operation of one of Aeroflot's leading planes, the IL-62.

Scientific research institutes are working on further improvements in methods used in flight and technical operations, and in the organization of the air space and air traffic control. Some of the program's most effective measures include optimization of flight conditions, a new system for vertical echelon arrangement, recommendations for cutting back on the warming up of engines before take-off and on take-off using a rating system, among others.

Experience has shown that there are some large reserves for improving flight and technical operations. Measures for revising limitations on flight altitude based on the flying weight of a number of planes, and an additional decrease in cruising speed for the IL-62, TU-154, and TU-134 planes will help save more than 60,000 tons of aircraft fuel per year.

An analysis of the consumption of aircraft fuel at civil aviation enterprises shows, however, that in many cases there is a substantial increase in the consumption of fuel due to the fact that the maneuvering time before landing (up to 15 minutes or more) and taxiing time before take-off exceed the norm by a significant margin, and also because "platforms" are formed when selecting an altitude and during descent. This is evidence that not enough attention is being given everywhere to this important issue. It is clear that moral and economic incentives to encourage aviation workers to conserve as much fuel as possible have not been put into effect.

Party and government decisions have indicated that widespread automation of technological processes is one of the basic directions for stepping up scientific and technical progress. Computers are the foundation of automation. In civil aviation computers are used extensively in all spheres of operation--from planning the sector's development to the sale of tickets and reserving seats on flights. A network of computer centers and automatic control systems has been created to control various aspects of Aeroflot's production activities. Automation equipment is also being introduced to control the direct technological processes involved in flying the aircraft. One example of this application can be seen in air traffic control. Thanks to consistent automation of air traffic control processes, the basic indicators of the system's operation are rising--flight safety and regularity. Forecasts indicate that by the end of the century flight regularity could increase by 8-9 percent. An increase of just 1 percent represents an annual saving of 20 million rubles.

Statistics show that more than two-thirds of flight schedule violations are caused by unsuitable meteorological conditions for take-off and landing. This clearly illustrates the need to introduce systems that will permit landings at the minimums for ICAO [International Civil Aviation Organization] categories 1 and 2. In the near future a great deal of work must be done to introduce automatic landing systems. The collective of the Automated Air Traffic Control Scientific and Experimental Center is already working with industrial enterprises on the testing of these systems for the IL-62 and TU-154.

Space technology will be used extensively in the air traffic control systems of the future. The primary difference between satellite equipment and traditional equipment for flight navigation is that satellite equipment is not dependent on the plane's altitude. This will make it easier to carry out navigation operations for all classes of aircraft, including airplanes and helicopters used on local routes and in agricultural operations. The creation of a satellite system is also far-sighted because up to the year 2000 new air routes will be put into operation that are meant to be used with instrument navigation alone. Most of these routes will be in the North and Far East, where a ground navigation network at low altitudes is not feasible economically.

Broad prospects are opening up for mechanization and automation of production processes in ground services. However, along with the clear successes that have been achieved in introducing the latest technology, one must also note that there are some unsolved problems. The organization of maintenance and repair of ground equipment leaves much to be desired. The progressive method of shipping freight in containers has not yet been introduced on a broad scale. The reliability of mechanization equipment produced by testing plants under the "Aviaremont" [Aircraft Repair] Association is sometimes subject to justified criticism. All this leads to a situation in which outdated methods of handling freight exist alongside a high level of mechanization (75-80 percent) in fueling operations and operations to keep the take-off and landing strips in good condition.

Progress in civil aviation is characterized not only by a significant increase in passenger travel, but also by its constantly expanding sphere of applications in the national economy. Today without the help of Aeroflot it would be practically impossible to develop remote and hard-to-reach areas, to carry out cartographic surveys of various sites, to perform land reclamation and land management work, high-rise construction, and many other operations.

Aviation workers have made a great contribution to carrying out the Food Program. They perform more than 100 different agricultural operations and perform cropdusting work over about one-third of the sown land. Increasing the efficiency of these operations is a constant concern of agricultural and sectorial science. Improved methods for treating fields, applying fertilizers, and combatting crop pests and diseases are being developed and used successfully. A highly productive agricultural apparatus is being created. Some efficient developments carried out by scientists at the Krasnodar Affiliate of the State Civil Aviation Scientific Research Institute are being incorporated into production.

Preparations are being made to replace the veteran IL-14, which has been used up until now in the Arctic and in Antarctica for ice surveys, guiding ships, and seeking out schools of fish.

In conclusion, I would like to mention one more important reserve for scientific and technical progress--the movement of production innovators, rationalizers, and inventors. In our sector they are making a tangible contribution, and their work accounts for an annual savings of 36-37 million rubles. Unfortunately, sometimes little attention is given to expanding this movement. The experimental base available for testing innovations is weak. Is

this why the number of proposals that would provide a large economic effect is relatively small, and most of the proposals are just small improvements?

Aeroflot workers are working hard to meet the quotas and socialist obligations for 1985 and the five-year plan as a whole, and they are striving to mark the 40th anniversary of the victory of the Soviet people in the Great Patriotic War and the 50th anniversary of the Stakhanovite movement with new achievements, and they are preparing a fitting welcome for the 27th CPSU Congress. One of the decisive factors in the success of their work is stepped-up incorporation of scientific and technical achievements into daily practice, along with doing everything possible to promote scientific and technical progress.

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## CIVIL AVIATION

### CHIEF OF AEROFLOT'S INTERNATIONAL ACTIVITIES

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 6, Jun 85 pp 6-7

[Article by V. Samorukov, member of the Ministry of Civil Aviation Collegium and chief of the Foreign Relations Administration: "In The Interest Of Cooperation"]

[Text] There is not much time remaining until the regular 27th CPSU Congress begins its work at the Kremlin in Moscow. In preparing for this important event, we are not only reviewing what has been accomplished during the five-year plan but are also outlining new advances and defining further perspectives.

During the 11th Five-Year Plan USSR authority in the international arena continued to grow and the Soviet State's principles of neighborly relations and mutually advantageous cooperation and its policy of detente were further confirmed in its international affairs. And this fully applies to the Soviet Union's aviation cooperation with the countries of the socialist community, with the developing states of Asia, Africa and Latin America and with the capitalist states. As the world's largest airline company, Aeroflot plays an ever important role in the USSR's international contacts. All questions concerning the development of international aviation ties are built on the immutable foundation of respect for the sovereign rights of states and national interests and on the principles of total parity.

International civil aviation ties are an inseparable component part of our state's system of foreign economic and scientific-technical ties. The primary thrust in the development of Aeroflot's international ties is toward concluding new treaties and agreements and implementing the existing ones, carrying out scientific-technical programs and also increasing participation in the activities of SEV [Council for Mutual Economic Aid], ICAO [International Civil Aviation Organization] and other international organizations.

Today the USSR has a solid treaty and legal basis for the development of cooperation in the area of aerial service and Aeroflot airplanes are flying to more than 120 cities in 97 countries of the world.

During the 11th Five-Year Plan the development of USSR international aviation ties took place under difficult international conditions, but they continued to expand despite this. For example, during the last five-year plan inter-governmental agreements on air routes were concluded with Malta, Djibouti, Upper Volta, Kenya, the Moldives, Togo, Sao Tome and Principe. Administrative authorization was obtained for flights to the United Arab Emirates and Argentina. In addition, major work was done to change and supplement existing inter-governmental agreements and to develop new inter-departmental understanding aimed at further expanding the USSR's international civil aviation service. The structure of international air routes was expanded and more than twenty new aviation routes were opened connecting the capital of our Motherland and also Kiev, Leningrad, Tashkent and Tbilisi with numerous cities in various countries of the world. It is also significant that Aeroflot has begun to introduce wide-body Il-86 airplanes on many international routes. Today the flagship of Aeroflot is flying into Berlin and Sophia, Paris and Athens, Frankfurt-am-Main and Madrid, to Delhi, Amman, Prague, Hanoi, Ho-Chi-Min City and Havana.

Aeroflot's ties with the airline companies of the socialist countries have continued to develop in a progressive and dynamic fashion. As CPSU Central Committee General Secretary Comrade M. S. Gorbachev stressed at the April (1985) CPSU Central Committee Plenum, the utmost improvement and enrichment of cooperation and the development of comprehensive ties with the fraternal countries of socialism are becoming an ever more important tasks. And Aeroflot is following this line by supporting and developing its ties with the airline companies of fraternal socialist states. We are totally justified in calling these ties the wings of peace and friendship and in the future we will try to strengthen these wings so that our friendship becomes even more fruitful. Work in this direction is based on an integrated program of further developing and improving cooperation, on developing SEV member-country socialist economic integration and on the SEV member-country Long-term Special Program of Cooperation in the development of transport service.

In 1984 existing inter-governmental agreements were supplemented and new inter-departmental understandings were developed on issues of future service with the CSSR, GDR and the NRB [People's Republic of Bulgaria]. These were aimed at expanding bilateral cooperation. New aviation routes were opened connecting Tbilisi with Berlin, Kiev with Dresden, Sochi with Leipzig, Tbilisi with Prague and Tashkent with Varna. Balkan Airlines was granted the right of making flights to countries in South East Asia with equipment landings in Tashkent.

A new form of cooperation among the airline enterprises in the fraternal socialist countries began to be actively used four years ago. This was the joint operation of individual international air routes and this has been developed most fully in southern transportation routes. Today six cities in the GDR, Czechoslovakia and Hungary are linked to health resorts on the Black Sea coast by eleven regular weekly flights. Also the understanding between Aeroflot and Balkan Airlines on transitioning all routes connecting the Soviet Union and Bulgaria to joint operations is a qualitatively new step in cooperation between Aeroflot and the airline enterprises of the fraternal socialist countries.

Scientific-technical cooperation between Aeroflot and socialist countries is being developed to fulfill the primary developmental trends worked out at the SEV member-country Summit Economic Conference that took place in Moscow in 1984. Inter-departmental agreements on scientific-technical cooperation were concluded with Ministries of Transportation for Bulgaria and Cuba and with the CSSR Federal Ministry of Transportation. These stipulated for the first time that the scientific potential of the cooperating countries was to be used as much as possible to resolve complicated transportation problems. Measures to coordinate the economic policies of SEV member-countries in the area of air transport on the basis of long-range prospects and the development of forecasts of the technical-economic development in air transport for SEV member-countries are planned for the 12th Five-Year Plan. Also the work of expanding the net of joint-use air routes is continuing.

In speaking about Aeroflot's mutual relations with the airline companies of the developing countries and those that have thrown off the yoke of colonialism, we must stress that more than half of the treaties on airline communications that have been concluded recently have been with such countries. Soviet aviation experts are providing many African countries, and specifically Guinea, Mozambique, the Congo, Libya, Angola and Ethiopia, with a lot of technical assistance both in developing a national cadre and in the operation of Soviet aviation equipment.

A relatively new developmental form has been the opening of "off-line" Aeroflot offices. This allows the preparatory work of assimilating new aviation transport markets to be carried out even before flights occur. These types of offices were recently opened in La Paz, the capital of Bolivia, and in Caracas. Work is underway to open Aeroflot offices in Brazil and Uruguay and the plan is to continue contacts to establish cooperation with Panama and Costa Rica, Australia, New Zealand and the Philippines.

As was already stressed, we had to develop aviation links with capitalist countries under difficult, aggravated conditions. The incident with the South Korean airplane-violator that was provoked by US intelligence agencies and used by imperialist circles to arouse hysteria against our country had a definitely negative effect. In January 1982 Aeroflot flights into the US were suspended on order of the American administration and in September 1983 the Aeroflot office in that country was closed.

Under pressure from reactionary circles, the government of the FRG denounced its supplementary protocol on flights across Siberia. The reasons for this were carried in detail in IZVESTIYA in an article entitled "Who Offended Lufthansa?" Reactionary circles in a number of capitalist countries falsely spread various fabrications about Aeroflot and slanderous articles about Soviet civil aviation were printed in the foreign press. Minister of Civil Aviation B. P. Bugayev gave all of these fabrications a worthy reproof in his article "Washington Versus Aeroflot". Under these conditions, our work in developing cooperation with the capitalist countries of Europe and America were primarily directed at more effectively using the trans-Siberian and the trans-Asiatic routes and expanding flight routes.

Last year additional protocols to agreements on airline communications were signed with Great Britain and the Scandinavian countries and appropriate documents were signed with the Departments of Civil Aviation of Japan and France. Mutually advantageous conditions were defined for cooperation between the airline companies of JAL, SAS and British Airways in the operation of the trans-Siberian route. For example, in accordance with an understanding that was reached, Aeroflot will increase the frequency of flights into Tokyo to ten flights per week by the summer of 1987. In turn JAL will have the right, beginning on 1 April 1986, to make four flights in 1986 and five in 1987 on the trans-Siberian route without landing in USSR territories. These are in addition to their current three weekly wide-body Boeing-747 flights to Moscow. All of the Aeroflot and JAL flights, including those made on the trans-Siberian route without landings between European points and Tokyo, will operate on the basis of a null agreement.

Last year for the first time since the long interruption business contacts were established with the leadership of the American airline company Pan American and negotiations were held to discuss possible ways for reestablishing cooperation with Aeroflot. This fact in and of itself is of no small importance. It gives us reason to hope for the opening of a dialogue with the Americans on the issue of establishing regular airline contacts between the US and the USSR and correspondingly, for the restoration of regular Aeroflot flights to the US. There has been an urgent need for this for some time. In the opinion of members of the American-Soviet Economic Trade Council (ASTES), the lack of direct regular ties between the two great powers is a paradoxical fact, since there are major, stable aviation transport markets between the two countries. The US State Department characterized the recent contacts between the Aeroflot delegation and the leadership of Pan American Airlines as "inspiring optimism". However, in fact the Americans have tied opening Aeroflot routes to the US with their own political goals. We will try to eliminate the illegal bans on Aeroflot flights to the US and lift the discriminatory measures on banning commercial cooperation between Aeroflot and the American airline companies and tourist agencies and will also try to open an Aeroflot office in America.

Further expanding the number of Aeroflot fuel complexes in foreign airports is important in strengthening mutually advantageous cooperation. In 1984 an inter-governmental memorandum allowing Aeroflot airplanes to use Gander Airport was signed with Canadian authorities. This completed three years of work on developing this understanding and at the end of 1984 the complex became operational. Thanks to this, it is possible to begin an Il-86 flight in Havana and reduce operational expenditures on the routes between Moscow and individual Latin American points. Such complexes were opened earlier in Shannon (Ireland) and Larnaca (Cyprus). Setting up fuel complexes creates a solid foundation for expanding and improving the efficiency of Aeroflot airplanes and is of great benefit to the national aviation companies and firms that service the complex.

We have continued to develop scientific-technical ties with civil aviation departments and firms in France, Sweden and Canada. In 1982 a contract was concluded with the French firm SPI Batinol covering the development of central fueling systems at Sheremetyevo, Khabarovsk, Novosibirsk and Tashkent

Airports. In 1984 a contract calling for the Tomson-Titn to deliver an automated computer production system for the fuel complexes at Sheremetyevo Airport was signed and is being implemented. A contract for the delivery of passenger baggage-handling equipment at "Minsk-2 Airport" was signed with the SIETAM Company.

Economic and technical cooperation with the Finnish firm ARA covering the joint development, assimilation and joint production of snow removal equipment was developed within the framework of the understandings that were reached.

Negotiations and meetings between USSR Minister of Civil Aviation B. P. Bugayev and delegations headed by the heads of transport ministries and departments and the heads of aviation companies from the CSSR, Cuba, KNDR [the Korean People's Democratic Republic], England, Italy, Austria, the Netherlands, Finland, Sweden and Peru had major significance in the development of Aeroflot's international ties. During the negotiations the state of cooperation with foreign partners in the area of civil aviation was discussed and important decisions were made on questions dealing with perspective developments in international aviation services.

In 1984 in Warsaw a Soviet delegation headed by B. P. Bugayev signed a Soviet-Polish Agreement on further cooperation in the area of airplane construction. In March of that year an agreement was signed in Prague covering scientific-technical cooperation between the USSR Ministry of Civil Aviation and the CSSR Federal Ministry of Transport for the period 1986-1990. In April 1985 B. P. Bugayev and Italian Minister of Transport and Civil Aviation C. Signorile, acting in behalf of their two governments, signed agreements in Rome which significantly expanded the framework of Soviet-Italian cooperation in the area of aviation services.

In 1984 Aeroflot and British Airways exchanged publicity and guest delegations to mark the 25th anniversary of the founding of regular air service between the USSR and Great Britain. Such visits and exchanges are very important to the further development of our international ties.

Our country is rigidly following the Leninist course of peace and peaceful existence. We always meet good will with good will and trust with trust, but we will never waive the interests of our Motherland or her allies. Soviet civil aviators live by this idea, steadfastly gaining new successes in the development of Aeroflot's international air service and in mutually advantageous business cooperation with the other countries in the name of peace, progress and prosperity of all peoples.

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## CIVIL AVIATION

### RECENT ACHIEVEMENTS, PROBLEMS IN CROPDUSTING WORK

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 4, Apr 85 pp 26-27

[Article by A. Savchenko, chief of the Krasnodar Affiliate of the State Civil Aviation Scientific Research Institute and candidate of agricultural sciences: "The Honored Duty of Aviation Science"]

[Text] In the first four years of the 11th Five-Year Plan civil aviation airplanes and helicopters have been used to treat 412.5 million hectares of crop land. Mineral fertilizers were applied to an area of 164.6 million hectares, weed killers were applied to 117.5 million hectares, and 94.6 million hectares were treated for insects and plant diseases; defoliation measures were taken on 28.7 million hectares. The economic effect of aerial chemical spraying in the agro-industrial complex is in the hundreds of millions of rubles.

The long-term program for land reclamation that was discussed and approved at the October (1984) Plenum of the CPSU Central Committee represents a major new stage in the campaign for further increases in the fertility of crop lands and for fulfillment of the food program.

Many sectors of the national economy, including civil aviation, are directly involved in the realization of these goals. With the aim of carrying out the decisions of the Central Committee Plenum, our ministry worked out a set of measures meant to expand Aeroflot's contribution to increasing the efficiency of improved lands in order to bring about a steady rise in the country's food stores. Aviation science is supposed to play an important role in this important statewide task.

Increasing the efficiency and improving the quality of the use of aviation in agriculture are tasks that are being resolved through the creation and improvement of aircraft and agricultural equipment, the introduction of progressive methods, and efficient utilization of aircraft.

Associates of the State Civil Aviation Scientific Research Institute drew up the technological requirements for the creation of the TU-134SKh airplane, which is meant to be used for studying the land surface by means of aerial exploration methods that involve photographic and nonphotographic surveying. Together with organizations under the Ministry of Agriculture, the institute is participating actively in factory tests of this airplane, its systems, and

equipment. The navigation complex on the TU-134SKh makes complete automation of the aerial survey process possible.

Tests are continuing on new types of aircraft and agricultural accessories for them. Practical tests have been conducted, for example, on a modified spraying attachment for the AN-2 plane, which has better technological, operating, and economic characteristics than its predecessors. The studies have shown that the agrotechnical characteristics of the new agricultural equipment meet the necessary requirements. Recommendations have been made for state testing of this attachment with the AN-3 plane.

Aviation enterprises have received centrifugal sprayers for mineral fertilizers to be used on the KA-26 helicopter, which will provide an increase in the productivity of flights of up to 35 percent. Centrifugal sprayers that provide low-volume and ultralow-volume cropdusting are being used successfully on the AN-2 planes. As a result, the productivity of the planes has increased by a factor of 1.6, and thousands of tons of aircraft fuel are being conserved.

New operating conditions for the AN-2, with the flaps set down five degrees, which increases flight productivity by an average of 15 percent, are being used more and more. Research is being conducted on the possibilities of and flying conditions for cropdusting at night.

Work is being done to develop the KA-126 helicopter and begin series production of this aircraft, and equipment is being developed for the MI-8 helicopter for the application of mineral fertilizers and liquid chemicals. Sprayers and dusters for the AN-2 plane and the MI-2 and KA-26 helicopters are being modified. Ten sets of attachments for the AN-2 plane and KA-26 helicopter to be used for spreading trichogram have been manufactured and introduced.

The institute has also done a great deal of work on radiometric measurements of soil moisture and general soil conditions. This work has already been done over an area of more than 2 million hectares. The economic effect of these operations is over 4 million rubles. This work was awarded the USSR State Prize.

Altogether, one-third of the scientific research done at the institute in the interest of the national economy is tied closely to the country's agro-industrial complex. How does this benefit our kolkhozes and sovkhoses? What measures are planned in this area in 1985 and in the 12th Five-Year Plan? We will discuss the basic directions to be pursued by aviation science in the field of agriculture.

Winter wheat is one of our country's main food crops. Aviation carried out more than 20 different technological operations in the production of this crop, including work in areas where it is grown under irrigation. These operations include aerial sowing, aerial application of dry and liquid fertilizers and means for protecting plants from pests and disease, and efforts to prevent lodging of the grain; this makes it easier to harvest the grain and reduces losses. Universal application of these methods makes it possible to obtain up to 10 additional quintals of high-quality grain per hectare. Similar cropdusting methods for spring wheat and winter and spring rye in the

Nonchernozem and Central Chernozem regions of the RSFSR and a number of other soil and climatic zones in the country provide a great economic effect.

Rice is a labor-intensive crop that is grown primarily in flooded fields in which it is often simply impossible to drive machinery. Rice farmers also receive strong aerial support. The set of operations performed by airplanes and helicopters in the cultivation of this crop include the following agro-technical methods: aerial sowing in very damp soil; the application of mineral fertilizers in separate doses--early in the spring before the rice is planted and in the form of two supplements during the vegetation period (when the shoots appear and when side-shoots first start to form); weed-killing operations using a mixture of herbicides in the pre-planting period, systemic herbicides, and herbicides in the 2,4-D and 2M-4Kh groups during the side-shoot development period and before stalk formation; protecting rice from pests and diseases; thinning to accelerate ripening and desiccation of the rice in order to reduce the moisture in the grain, leaves, and stalk before the harvest.

Extensive use of aircraft is an important, integral part of the standard technology developed in the Soviet Union for the cultivation of rice on a modern industrial basis. It is being introduced in all the rice-growing regions of the country and will make it possible to obtain 60-80 quintals of grain per hectare.

There are practically no cotton farms that could get by without using aircraft. Planes and helicopters are involved in the application of fertilizers, protecting the fields from pests and diseases, pruning and pre-harvest defoliation of the cotton plants. Because of a decrease in the norm for the amount of liquid needed for defoliation, which is the primary form of aerial chemical work used on cotton, and the use of more economical flying conditions, the productivity of the AN-2 in this agro-technical job has risen noticeably. As a result, our sector and farms in cotton-growing republics are obtaining millions of rubles in additional profits.

Research has been completed on an aerial method for protecting tomato plants from the Colorado beetle and potato blight, and this method has been put into use. It calls for a reduction in the norm for consumption of the liquid from 50 to 25 liters in the campaign against the Colorado beetle and a reduction from 300 to 100 liters in the campaign against potato blight. There are plans to introduce this method in the Northern Caucasus over 15,000 hectares in 1985. The expected economic effect from increasing the harvest of tomatoes grown primarily in irrigated fields is up to 200 rubles per hectare.

New aerial methods for cultivating agricultural crops under irrigation that are being developed and introduced now are of great interest to specialists at aviation enterprises and in the agro-industrial complex. One very effective method, for example, is the aerial application of supplemental liquid nitrogen fertilizer containing a carbamide-ammonia mixture, and it guarantees an improvement in the quality of the grain. Compared to the urea solution that was used in the past, the more concentrated and effective carbamide-ammonia mixture makes it possible to cut the use of the liquid fertilizer in half (from 200 l/hectare to 100 l/hectare), increase aircraft productivity by 30-40

percent (from 37.6 to 55.5 hectares/hr), and to reduce the cost of this method by at least one-third.

Another promising innovation is the aerial application of glyphosate on rice fields. This is an all-purpose herbicide that is applied in doses of 3-6 kg in a working solution of 50-100 liters per hectare. After this herbicide is applied to kill millet grass and tuber reeds, repeated applications are not necessary.

A new aerial method for treating alfalfa seeds with microelements and compound liquid fertilizers deserves attention. This process makes it possible to increase the yield of alfalfa seeds, a very costly commodity, by a factor of approximately 1.5.

Scientific research at the Krasnodar Affiliate of the State Civil Aviation Scientific Research Institute is focusing more and more on the development of technologies to reduce air pollution during cropdusting work. Work is being done to study the use of anti-evaporators, coarse-dispersion emulsions, fibrillar aerosol, pesticides combined with fertilizers, and biological means of plant protection. A method is being used for aerial application of trichogram, the larvae of which eat the contents of eggs of harmful insects that are deposited on the leaves of corn, cotton, and beets.

An important task in agriculture now is effective control of production processes in irrigated areas based on prompt and accurate information on the condition of the irrigation systems. Methods that involve evaluation and monitoring of the systems on the ground require considerable labor, time, and material resources. In cooperation with associates of scientific institutions under the Ministry of Agriculture and the Lvov Polytechnical Institute, the collective of the Krasnodar Affiliate proposed a system for aerial stereophotogrammetric planning control with relief mapping that is accurate to within 3-4 centimeters. In contrast to the previous method, the labor productivity in this process will be 5-6 times higher, and expenses will be cut by an average of 30 percent. The methodological elements of this aerial evaluation of the technical and operating condition of rice irrigation systems were tested successfully at farms in the Kuban region.

Aerial systems for planning the surface of irrigation systems, especially those used on rice and cotton fields that cover a significant area, are in need of further development and improvement. There are plans to use heat sensors, spectrophotometers, radar, and multi-spectral scanners, which can be installed on aircraft along with other instruments. This year there are plans to test, together with the State Land Resources Institute, an aerial method for planning land reclamation in the Mary ASSR, and with a specialized institute of the Turkmen SSR Academy of Sciences, to take an inventory of the feed stores and grazing lands in the desert and semi-arid region in that republic.

The Krasnodar Affiliate worked with the Central Agro-Chemical Services Institute to develop and introduce in 1984 over an area of more than 1.5 million hectares an aerial system for monitoring the application of fertilizers and chemicals on fields sown to grain. This year this method will be used on more

than 2 million hectares, with a total economic effect of about 3 million rubles.

Research is being conducted on the creation of a second generation of radiometric equipment for measuring soil moisture from the AN-2 airplane. This will make it possible to establish the optimal time intervals and norms for watering irrigated land, and to provide a scientific basis for the agrotechnical methods used in crop cultivation depending on the condition of the soil. The new equipment will be two to three times as productive as the old equipment, and in addition to information on soil moisture, it will provide readings on the surface temperature of the soil.

As in the past, there is still a serious problem in the development of equipment for carrying out cropdusting work without signal operators. This is even more serious when working on irrigated land because shifting signal operators around is very difficult. We are working on this problem and are hoping to find a suitable solution.

Quite a bit is being done by scientists in this sector to improve the planning and organization of aerial services for agriculture. A new system of indicators for cropdusting work has been introduced successfully in Belorussia; the basis of this system is not flying hours, but physical hectares, and other Aeroflot administrations are adopting this system. During the process of this reorganization, in our opinion a special approach should be taken to irrigated lands, taking into account their specific nature. The fields that are included in aerial spraying are more often than not complicated sectors and higher rates are paid for the work. One must also consider that the aerial chemical battle against weeds and other plant protection operations are much more difficult, since they are carried out selectively depending on the watering schedule. This interferes with the use of advanced methods, such as combined or reserve methods, which in turn reduces the productivity of flights and the wages paid per hectare. The organization of cropdusting operations on irrigated lands using the wing-propeller method must be studied closely, keeping in mind the future utilization of the MI-8 helicopter.

It is the honored duty of the collective of scientists in our sector, who are participating directly in the development and maximum strengthening of agricultural production and in putting the Food Program into practice, to resolve successfully these and many other important tasks stemming from the decree of the October (1984) Plenum of the CPSU Central Committee.

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CIVIL AVIATION

WORLD'S LARGEST AIRPLANE NOW BEING TESTED

Moscow TRUD in Russian 23 May 85, p 3

[Article by N. Dombkovskiy, special TRUD correspondent: "'Ruslan' Storms the Skies: The World's Largest Airplane Is Being Successfully Tested"]

[Text] Kiev--The giant AN-124 airplane, developed by the OKB [Test-Design Bureau] imeni O. K. Antonov, can take off with a load of 60 Zhiguli cars, including their passengers and baggage. Because of its huge power, the designers have named it "Ruslan," after the legendary Russian hero.

Turing the corner of the last hangar, our vehicle started across the test airport's runway. At the far end of the runway, a beautiful white bird sat motionless, its feathers a little ruffled. Even though I knew its dimensions, I was still a little confused: the airplane didn't seem that big from here. The graceful proportions and the pleasing shape masked its true dimensions.

But everything was soon put in perspective. For the several minutes that we drove closer to the Ruslan, it became bigger and bigger. Up close it was a true giant: the size of a five-story building with four entrances--except that it can fly. It's obvious from the first glance that the plane can fly beautifully! It's true what they say: a beautiful airplane simply can't fly poorly.

"Well, let's get started," said the test pilots as they invited me to the plane. As we approached the plane, the marvels began.

A brief signal sounded, and the airplane suddenly began to slowly "crouch" on the concrete, folding its landing gear up underneath it. After a minute, the AN-124 had its "belly" on the ground, like a pack animal which kneels to accept its load. The fuselage nose opened up and went straight up from the cockpit. Doors also opened up further back. In two or three minutes, the freight ramps were lowered and the Ruslan was ready to load freight.

An amazing sight unfolded in front of me! The mouth of the huge airliner reminded me of both the hold of a container ship and a large railroad

tunnel, though without the rails. The dimensions of the cargo hold are enormous: 6-1/2 meters wide, 4-1/2 meters high and over 30 meters long!

I immediately thought of the smallest AN-series airplane, which our newspaper described a year and a half ago. That nimble microairplane could fly inside the cargo hold, flit over to one side, make a circle and fly out the other door.

But the high-capacity Ruslan isn't designed for stunts. Its task is to haul fully assembled mechanisms and machinery, such as construction and road-building machines. The AN-124 can lift 150 tons! This is nearly one and a half times more than previous airplanes. There is nothing else like it in world aviation.

But these aren't the only impressive numbers. The Ruslan can fly at speeds up to 850 km/hour at a ceiling of 12,000 meters. It can fly an amazing 16,500 km non-stop! In addition, it can use unpaved runways.

All of these data have been fully confirmed in test flights. No attempts were made to set new world records, but it is obvious that many present records are now out-of-date.

... We go from the cargo hold to the top floor. Right at the top of the ramp is a four-room apartment for the back-up crew. The rooms are simply mansions. There is a kitchen, bathroom and two bedrooms for three people each. Two crews are needed on long flights, and they must be able to relax well.

Now we go to the sanctum sanctorum--the cockpit. It is much different than the usual cockpit, looking more like a ship's navigating bridge. The spacious, well-lit room is designed for six people: the pilot, co-pilot, navigator, radio operator and two flight engineers. There are far fewer instruments than in other airplane cockpits. On-board computers help process the information.

This short article cannot describe everything new about the Ruslan. The development of this airplane was a radically new step, not only for domestic, but also for world-wide aviation. Let's go through this systematically. Are such giant airplanes even needed? Yes, they are needed. The first few years after the "Anteys" (the AN-22's, which were also developed here in Kiev) were put into service showed that they are absolutely essential to the national economy. Without the AN-22's, it would be impossible to develop the natural resources of Siberia and the North, including their oil and gas fields, on the present scale. But as time passed, bigger and bigger load capacity was required. Could this be achieved?

Airplane designers the world over know about the "square-cube" rule. The essence of this rule is that as an airplane gets bigger, the wing load increases much faster than the wing lifting capacity. It reaches a point where the airplane size can't be increased further, because even an unloaded plane wouldn't be able to get off the ground. Where is the limit?

Soviet airplane designers have found a way to increase the load capacity by improvements in airplane engineering.

"But this isn't simply an engineering task," says P. V. Balabuyev, USSR and UkSSR State Prize laureate, Hero of Socialist Labor and chief designer of OKB imeni O. K. Antonov. "A whole series of unforeseen problems had to be solved, particularly organizational. Thousands of organizations and labor collectives participated in developing the Ruslan. Cooperation was at the highest possible level.

"There were many difficult problems in aerodynamics, materials science, computer technology and many other areas. These problems couldn't be solved by traditional methods. An entirely new approach was needed..."

One has to agree with the chief designer. There are various ways to keep up with technical progress. Some designers go forward by small, safe steps, gradually improving their proven designs. Other designers attack along a broad front simultaneously. This is more risky and requires more self-sacrifice, but the results are incomparably greater. The collective of the twice-decorated OKB imeni O. K. Antonov belongs to the latter group.

The AN-24 was the world's first airplane made of glued and welded joints. The AN-22 was the world's first wide-body airplane and is the largest high-capacity plane. It was the first to use super-large monolithic parts. And now, they've designed the AN-124.

In aviation, there is the concept of weight efficiency. This is approximately the ratio of the airplane's carrying capacity to its total weight. The Ruslan's weight efficiency is unprecedentedly high. Thousands of designers from dozens of ministries and organizations worked together to reduce the weight of individual parts with no reduction in part strength. Their efforts resulted in this giant airplane.

Millions of calculations were needed for the job, and it would have been impossible without computers. The computer can rightly be called one of the developers of the Ruslan.

Let's visit, for example, one of the offices where designers are working. The spacious, well-lit room contains computer terminals. After receiving a task to develop a part, the specialist enters its basic characteristics on the terminal. In a few minutes, the computer "draws" the part on its screen. The specialist can change the drawing with a light pencil. The computer independently calculates different variations and gives the designer complete information. Then, the specialist simply presses a key and the "drawing" is entered into the computer memory, from which it can be retrieved at any time.

There is another instance that the OKB staff likes to recall. It was decided to make the Ruslan's cells--the load-carrying parts of the wings--as continuous structures without transverse joints. This would mean that the cell parts would be made from monolithic blanks over 30 meters long. Kiev did not have the necessary equipment, so the wings--keep in



mind, each over 30 meters long!--were made in another city, several thousand kilometers away.

Then the problem arose: how to get these parts to Kiev? They were too large to go by rail. Truck and water transport were also ruled out, because hundreds of bridges, crossings and power-line supports would have to be rebuilt. What to do?

Petr Vasil'yevich Balabuyev came up with the answer. He proposed that the wings be shipped on top of AN-22's! Careful calculations and wind-tunnel tests showed that this was possible.

I saw the documentary film: the AN-22, with a third tail fin mounted aft and with its load sticking far out in front, is flying over forests and rivers. The flight was successful, and a new method of transporting oversize loads will probably go down in history.

It's impossible to tell the whole story. The epic story of the Ruslan's development is worthy of a large book, or possibly even several books.

"Crew, prepare yourselves for takeoff!" was heard in the plane's compartments.

The plane's pilot, Honored USSR Test Pilot Vladimir Ivanovich Terskiy presses a button on the control panel. The indicator panel lights up and the computer begins to check all the systems and devices aboard the Ruslan. If something is wrong, an alarm signal will sound and the display will show the exact location of the malfunction.

After several minutes, the screen says: "Airplane ready for takeoff!"

The air-traffic controller gives his permission. Vladimir Ivanovich moves the stick forward. The noise level in the cockpit rises slightly, a mighty force softly pushes you into your seat and the four super-powerful, super-economical engines, designed by the OKB imeni V. A. Lotarev, easily lift the Ruslan from the runway. Four hundred and five tons of human thought, concentrated in metal and composite materials, leaves for a routine test flight.

Each new airplane is not just the latest model in a series. It contains the latest achievements of dozens of industrial sectors. It becomes a mirror of the country's scientific-technical progress. So far, few people have seen the Ruslan. But, it will soon be seen. It will certainly be the hit of the Paris Air Show. May you have calm and clear skies, Ruslan!

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## MOTOR VEHICLES AND HIGHWAYS

### RSFSR DEPUTY MINISTER ON MOTOR VEHICLE HARVEST SUPPORT

Moscow AVTOMOBILNYY TRANSPORT in Russian No 6, Jun 85 pp 1-2

[Article by V. Medvedev, deputy minister of RSFSR Motor-Vehicle Transport:  
"Gathering the Harvest Requires a High Degree of Work Organization"]

[Text] Effectiveness in the production and procurement of agricultural output depends greatly upon how well motor-vehicle transport work is organized. The organization of agricultural-product hauling becomes especially important during the harvesting period, when haulage volume increases severalfold and automotive transport of many ministries and agencies is enlisted in order to bring in the harvest in a short time.

The specific tasks set for everyone participating in the harvest, in support of the gathering, haulage and procurement of products of the 1985 harvest within the periods optimum for agricultural operations, requires motor transport workers to apply all their efforts, knowledge and experience in avoiding idle time of harvesting units that is caused by incorrect planning of transport-equipment operations. The agricultural product should be hauled to procurement and transshipping enterprises and to the distribution network in the shortest possible time and without losses, providing, in so doing, for highly effective transport utilization. These requirements can be met only by a high degree of organization of the use of each truck and trailer and loading and unloading mechanism and of the work of the entire harvesting-transporting-procurement complex.

Experience gained by motor-transport workers in gathering the harvest in autonomous republics, krays and oblasts of the Russian Federation and in other Union republics, indicates convincingly that the assigned goals are met successfully with competent planning for the hauling of agricultural products and a high degree of responsive centralized control of transport equipment operations, in combination with the wide use of advanced work methods. Today's motor transport workers have at their disposal a large number of progressive methods for haulage. They are, primarily, the Saratov method of centralized current planning and control of harvesting, transporting and procurement operations, the brigade-contract method, the organization of hauling with the wide use of wheeled tractors and freely circulating trailers, the use of intermediate compensators (storage) during haulage, and certain other operations.

Wide introduction of these methods is based upon the centralized use of motor-vehicle transport. In so doing, an integrated approach to the job by all participants in the harvesting-transporting-procurement assembly line is

required. Success here is impossible without the close labor collaboration of agricultural workers and the workers of motor transport, procurement and transshipping enterprises.

The essence of progressive methods for work during the harvesting period is repeatedly publicized in the press and also at regularly conducted Union and republic seminar-conferences on the exchange of advanced experience. But these methods give good results only if their application is preceded by earnest preparatory work in which representatives of motor transport, agricultural, procurement and other concerned organizations participate.

The experience of Saratov Oblast, where a set of such measures for the harvest period is developed and approved by the oblast ispolkom each year (including this year) in good time, back in March, even though this method of work is by no means an innovation for Saratov personnel, confirms the necessity for such an approach. And this is understandable. The working conditions for harvesting, with their seeming constancy, actually change somewhat each year: the number of heavy-duty truck-and-trailer combinations increases, the demands for organization of loading and unloading grow, and weather conditions necessitate considerable revisions.

Each year new people are brought into this big job. They must be taught ahead of time to fulfill their defined obligations, especially in the management of those who haul the agricultural products from the harvesting combines, where up to 70 percent of the motor vehicles involved in the harvest are employed.

Last year the workers of regional RSFSR Minavtotrans [Ministry of Motor-Vehicle Transport] associations and motor-transport enterprises, in fulfilling the task of providing for the unified management of motor transport, were employed in the harvest regardless of their agency jurisdiction, and they devoted no little effort to improving the organization of agricultural-product haulage, based upon the wide use of advanced methods.

The Saratov method for organizing agricultural-product haulage, with various options which consider local conditions, was used in 682 rayons of 36 oblasts, krays and autonomous republics. Grain and sugar beets were delivered to receiving and transshipment enterprises in these regions in centralized fashion. The haulage volume of agricultural products performed by contracting brigades exceeded the 1983 level, reaching 60 million tons.

The wide use of advanced methods has enabled some krays and oblasts to raise motor-transport output and, thereby, to cut the harvest's requirement for motor vehicles. Thus, in Stavropol Kray, where agricultural-product haulage increased greatly over 1983's (by 6.5 million tons), the acquisition of motor vehicles from other oblasts was reduced by 2,400 units and the average daily output was 4.4 tons per motor-vehicle ton of load-carrying capacity for the automotive fleet engaged in the harvest. In Krasnodar Kray, using the same number of motor vehicles as in 1983, more than 7 million more tons of agricultural products were hauled.

An analysis of transport utilization during the 1984 harvest indicates that in those oblasts where attention was devoted to introducing advanced haulage

methods (Krasnodar and Stavropol Krays, the Bashkir and Mordvinian ASSR's and Tula, Kursk, Lipetsk, Tambov, Kurgan and some other oblasts), the average daily output per motor-vehicle ton of load-carrying capacity of the motor-vehicle fleet involved in the harvest was the highest in the RSFSR, exceeding 4 tons. At the same time, some oblasts either paid no attention to progressive methods, which have indisputably proved their advantages, or they introduced them formalistically.

For an example, let us compare the results of using motor transport during last year's harvest in two neighboring oblasts: Tula and Ryazan, which are practically identical in the conditions for motor-transport work and in volume of and time periods for hauling agricultural products. In Tula Oblast the Saratov method was used in practically all 18 agricultural rayons, and daily output in the oblast was 4.2 tons per motor-vehicle ton of the fleet's load-carrying capacity. In Ryazan Oblast this method was used in only 4 rayons and the output was 2.5 tons.

A no less important reserve for increasing motor-transport operations effectiveness is wide use of the brigade-contract method for hauling agricultural products. During last year's harvest, about 5,400 drivers' brigades with more than 60,000 motor vehicles (84,500 of them were common-carrier transport), worked under the contract method in the RSFSR. The average daily output per vehicle in these brigades was 4-4.5 tons per motor-vehicle ton of the fleet's load-carrying capacity. This was 1.5-fold above the average output for the Russian Federation. The benefit is obvious. Motor transport workers in Rostov, Orenburg, Kursk, Voronezh, Novosibirsk, Omsk and Chelyabinsk Oblasts, Stavropol and Krasnodar Krays and the Bashkir ASSR got the best results in organizing contract work for drivers' brigades.

At the same time, the share of hauling by the brigade-contract method remains insignificant in the Tatar, Mariy and Mordvinian ASSR's, Krasnoyarsk Kray, and Tyumen, Kurgan, Belgorod, Astrakhan and certain other oblasts.

The brigade contract has proved itself well at all stages of haulage, especially in hauling agricultural products from the harvesting equipment. The brigade contract is combined successfully with the Saratov method for organizing the planning and management of haulage. But introduction of the contract method also requires much preparatory work, which must be performed in good time, before harvesting starts. It is necessary to organize the contract brigades, to identify the targets of their operations, and to coordinate all the measures with the kolkhozes and sovkhozes where they will work.

Experience indicates that during the harvesting period drivers' brigades were rushed from one facility where haulage had been completed to another. Managers of motor-transport enterprises should consider this and organize contract work for the entire harvesting period, monitor it and extend assistance to brigades in timely fashion.

Often there were still cases where truck trailers acquired for the harvest were used unsatisfactorily. At times trailers detached from trucks were doomed to idleness while the truck worked at hauling grain away from the combines.

The experience of certain Kazakhstan oblasts proved convincingly that, thanks to the organized use of freely circulating trailers when hauling grain away

from the combines to the threshing floor, the use of trucks and wheeled tractors could be greatly improved and the requirement for motor transport reduced.

Thus, according to Kazakh SSR Minavtotrans data, 3,400 tractors, 3,200 trucks and 9,900 two-axle trailers were required to haul the grain from 11,000 grain-harvesting combines under the combined trailer method for hauling. Calculations indicate that about 6,500 more trucks and 1,000 more workers would have to be acquired to organize the same haulage without circulating trailers. The benefit of the method used is obvious.

It should be emphasized that in some Russian Federation autonomous republics, krays and oblasts (Altay Kray and Novosibirsk, Orenburg, Kuybyshev, Saratov, Volgograd and some other oblasts) conditions for harvesting, transport and procurement operations are almost indistinguishable from those of the Kazakhstaners, but the workers of motor-transport and agricultural organizations did not pay due attention to the combined-trailer method. A paradox results: in the Kazakh SSR, truck trailers were used with maximum benefit during the harvest, while in the Russian Federation the trailers stand idle during such work. This positive experience of Kazakhstan motor-transport workers must be introduced more boldly.

The progressive methods for organizing agricultural-product haulage that have been enumerated do not exhaust all the advanced experience gained by drivers and motor-transport engineers and technicians in collaboration with workers of agricultural and procurement organizations. The socialist competition that has been developed among collectives and individual drivers engenders each year ever newer methods for highly productive work during the harvesting, hauling and procurement of agricultural output.

The experience gained and a creative approach to organizing this work at all levels (from driver to manager) will enable motor-transport workers to make their contribution to fulfillment of the Foodstuffs Program and to complete the harvesting, transport and procurement campaign of 1985 on time and with high work quality.

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## MOTOR VEHICLES AND HIGHWAYS

### PROPOSALS FOR IMPROVING MOTOR VEHICLE HARVEST SUPPORT

Moscow AVTOMOBILNYY TRANSPORT in Russian No 6, Jun 85 pp 14-17

[Article by V. Zyazev and V. Petrov, Scientific-Research Institute for Motor-Vehicle Transport [NIIAT]: "Motor Vehicle Transport Support for the Agro-Industrial Complex"]

[Text] The most important feature of the special-purpose comprehensive approach to solving the foodstuffs problem, as the papers of the May 1982 CPSU Central Committee Plenum noted, is correlation of the work of agricultural enterprises and the sectors, industry, transport and trade that serve it, with subordination of all their activity to the common final goal--the production of high-quality food products and the delivery thereof to consumers.

A prerequisite to carrying out the Foodstuffs Program is motor-transport support of the agro-industrial complex (APK), that is, timely and complete execution, at least expenditure in resources, of truck hauling of freight, in close collaboration with the activity of all APK subunits. Dispersion and bureaucratic isolation of the rural motor-vehicle fleet, a lack of the required coordination and correlation of its work, and poor development of centralized freight hauling affect agricultural-production efficiency adversely.

In the Russian Federation and certain other Union republics, the experience gained in motor-transport support of harvesting and procurement is a most important element of agricultural production. This experience, in our opinion, can be used to a great extent in developing a system for motor-transport support of the APK.

A system of unified operational supervision of motor vehicles, regardless of their agency subordination, has been used widely in gathering the harvest. Back in the formative period, this system was founded on the basis of a comprehensive plan for organizing motor-vehicle operation in each oblast (and kray and ASSR) during the preparatory period and during harvesting.

In order to coordinate all harvesting, transport and procurement participants into a single complex, the system called for creating interagency organs for operational supervision in the form of oblast and rayon controller services, central control points, and transport-administration and common-carrier motor-transport enterprise posts, and also for forming both integrated harvest-transporting brigades for bringing the harvest out from the fields and plantations to the threshing-room floor and centralized motor-vehicle detachments for hauling the agricultural products of kolkhozes and sovkhoses

to the receiving enterprises. There is no doubt that the presence and the activity of interagency operational groups during the harvest period was one of the decisive factors in the establishment, dissemination and improvement of the system for unified operational supervision of the motor-vehicle fleet, irrespective of agency subordination.

An important step in improving the system for organizing motor-vehicle operations during harvesting was (beginning with 1972) the successful implementation of a centralized integrated transport service for the sugar mills. For the first time in the harvesting and dispatch of sugar beets, kolkhoz and sovkhos harvesting equipment, the sugar mills' receiving equipment, and rational types of transport equipment were combined organizationally into a single complex (in each sugar mill's region and its beet-sowing areas).

The operational coordination of the whole complex was for the first time accomplished by a single programmed interaction calculated on a computer and issued in the form of work schedules for trucks, with a definite number of types thereof and their operating modes, for each brigade and kolkhoz and for the sugar mill as a whole. In order to monitor this technological process, haulage-control centers also were established for the first time. Experience indicates that productivity of all the equipment increases 1.5- to 2-fold under such a system for hauling sugar beets.

In the ensuing years, NIIAT [Scientific-Research Institute for Motor-Vehicle Transport] developed, jointly with the regional motor-transport associations and Rosselkhoztrans [RSFSR Association for Transportation for Agriculture], and introduced effective methods for organizing centralized haulage of potatoes and, in Astrakhan and Volgograd Oblasts, methods for organizing the haulage of vegetables and melon crops, using truck containers and integrated mechanization of loading and unloading. This will provide for considerable improvement in the use of the motor-vehicle fleet during the harvesting of such labor-intensive and large-scale types of agricultural crops.

The next step in increasing motor-transport utilization effectiveness during harvesting was the development of a system of centralized computer-assisted planning and control of transport-equipment operations, which has received fame as the Saratov method, and also introduction of the brigade-contract method at the initiative of drivers V. Nosachev and I. Yeroshenko from Rostov-gruzavtotrans [Rostov Motor-Vehicle Transport Association]. As a result, these brigades achieved record output for hauling grain from kolkhoz and sovkhos threshing floors to grain-receiving enterprises--90-100 tons per one truck and trailer combination per shift at a hauling distance of up to 35 km.

Improvement in organizing motor-transport work for harvesting has enabled motor-transport support for agricultural production to be increased and motor-vehicle utilization to be improved during this important period. Data for the last 10 years cited in the table testifies to this. It is characteristic that the average load capacity of the motor-vehicle fleet involved in the harvest increased an average of 30 percent, and this indicated a substantial increase in the intensity of its use.

Despite an absolute and relative reduction in the motor-vehicle fleet involved in the harvest, up until now hundreds of thousands of trucks are sent each year to the main grain and beet growing areas from the national economy.

In so doing, cases of acquiring vehicles that greatly exceed the requirements still are not rare, the result of which is nonproductive idle time for them at the height of the harvest. Meanwhile, transferring one motor vehicle costs the state an average of 700-800 rubles and leads to the consumption of an additional 250-300 liters of fuel, not to mention the harm caused the national economy's branches by the diversion of the trucks from their basic tasks for 4-5 months.

Key:

1. Years.
2. Indicators.
3. Amount of agricultural products hauled, percent.
4. Number of trucks involved in hauling harvest in RSFSR, percent.
5. Average daily output in tons per operating truck, percent.

Показатели (2)	Годы (1)									
	1976	1976	1977	1978	1979	1980	1981	1982	1983	1984
Объем перевозок сельхозпродуктов, % (3)	100	154.2	143.6	163.4	139.3	156.7	121.7	159.4	183	165.7
Количество автомобилей, привлекаемых к перевозкам урожая в РСФСР, % (4)	100	108.8	105.5	112	107	107.8	99.5	105.7	101.3	93.1
Среднесуточная выработка в тоннах на один работающий автомобиль, % (5)	100	119.2	127.9	141.3	120.2	134.6	123.1	135.6	154.7	160.6

Along with the considerable improvement in motor-transport support for harvesting and in motor-vehicle fleet utilization for hauling agricultural products, the truck fleet as a whole is not being used satisfactorily in agriculture.

Thus in 1979-1981, output per truck within RSFSR Minselkhos [Ministry of Agriculture] was 3.2 percent lower than in 1976-1978, and the output coefficient was 3.4 percent lower, while the prime cost of haulage rose by 3.7 percent. This can be explained by only one thing: during harvesting a system for organizing effective motor-transport work is being used successfully, while such a system is absent in the daily activity of agricultural enterprises.

As indicated by domestic and foreign experience and a survey of agricultural regions and of agro-industrial complex enterprises and organizations, the main deficiencies in rural motor-transport work are:

--organizational and intra-agency isolation of transport equipment and the dispersion thereof over numerous small motor-transport enterprises and subunits of kolkhozes and sovkhozes;

--an absence of precise demarcation of the spheres of activity of agriculture's truck fleet and the common carrier fleet and of agencies within regions;

--a lack of organs for interbranch planning, coordination and organization of the mutual activity of motor-vehicle transport and for centralized supervision of its work on the line; and



--an unjustifiably low level of development of centralized freight haulage and the inadequate application and poorly effective utilization of specialized motor vehicles.

Even where rayons had common-carrier motor-transport enterprises to carry out the centralized hauling of general-purpose freight, much freight for kolkhozes and sovkhoses is delivered by the latter's trucks by the "self-dispatching" method. The motor-vehicle fleet of Rosselkhoztekhnika [RSFSR Agricultural Equipment Association] in most cases is used not for delivering freight to kolkhozes and sovkhoses but for servicing various facilities in rayon centers and for interrayon and interoblast transport. As a result, the average annual output per rated motor-vehicle ton is on the 550-600 ton and 7,500-9,000 ton-km levels and the prime hauling cost is 1.2-1.4 rubles (per 10 ton-km).

In accordance with May 1982 CPSU Central Committee Plenum decisions, the country has established a system for controlling its agro-industrial complex. In rayons and oblasts, regional (rayon and oblast) agro-industrial associations, which are under the associations' soviets, have been formed, and republic commissions have been established in the Union republics. A Union APK commission is in charge of the whole system for controlling the country's agro-industrial complex.

In our opinion, these organs can influence the functioning of the system of motor-transport support for rayon agro-industrial associations (RAPO's) the same way that rayon and oblast operational groups influenced motor-vehicle fleet haulage of agricultural products during harvesting. The validity of such an opinion is reinforced by development of the Model Statute on RAPO's, in accordance with which new (permanent) control organs are empowered by law to centralize various agricultural-production functions, charging them with fulfilling these functions at enterprises and organizations regardless of agency jurisdiction, and also with taking steps to create for these purposes specialized subunits that are based upon interfarm cooperation.

As indicated by NIIAT's developments, which were made jointly with the All-Union Scientific-Research Institute for the Mechanization of Agriculture (VIM), it is desirable that all freight haulage performed in rural rayons between harvests be divided into the following three basic groups (according to motor-vehicle fleet jurisdiction);

--on-farm hauling of kolkhoz and sovkhos freight that is carried out within their grounds, which should be assigned to the kolkhozes' and sovkhoses' transport means;

--bringing in and dispatching agricultural freight (livestock output and freight for agriculture alone: mineral fertilizers, machinery, feed, processed products and wastes of food-industry enterprises, and so on) for kolkhozes and sovkhoses and other enterprises that make up the RAPO, which, it is recommended, should be performed by specialized motor-transport enterprises created by decision of the RAPO soviets, based upon interfarm cooperation; and

--the hauling of general purpose freight, that is, goods that are usable in both agricultural and other branches of the economy (fuel, building materials, industrial commodities and freight, and the finished output of light and

food industry enterprises), for enterprises, organizations and the people of the rayons should be accomplished, as a rule, by common-carrier transport enterprises.

Such a division of the spheres of activity of the motor-transport activity of common carriers and agriculture (agro-industrial associations) and of the transport equipment of kolkhozes and sovkhoses will enable transport support of the agro-industrial complex to be improved.

It is desirable to concentrate the truck fleet that hauls agricultural freight in the RAPO's motor-transport enterprises, general-purpose freight in the common-carrier motor-transport enterprises. In cases where there are no common-carrier motor-transport enterprises in a rayon, the desirability of creating one should be examined, and, where a positive solution to this question is impossible, then general-purpose freight should be hauled by the RAPO's motor-transport enterprises.

The RAPO should create a RAPO unified motor-transport service (YeAS) based on the motor-transport enterprises being organized, which would unite automotive columns that are specialized in hauling definite types of freight; columns for mechanizing loading and unloading operations that are outfitted with mobile loading and unloading equipment; subunits that render technical support to freight hauling, to include resources for storing and maintaining motor vehicles and loading and unloading equipment in working order, as well as for extending technical assistance to trucks on the line; subunits for promoting safety in hauling, loading and unloading, and for accomplishing training for the YeAS collective; and a center for freight-hauling support (TsOPG).

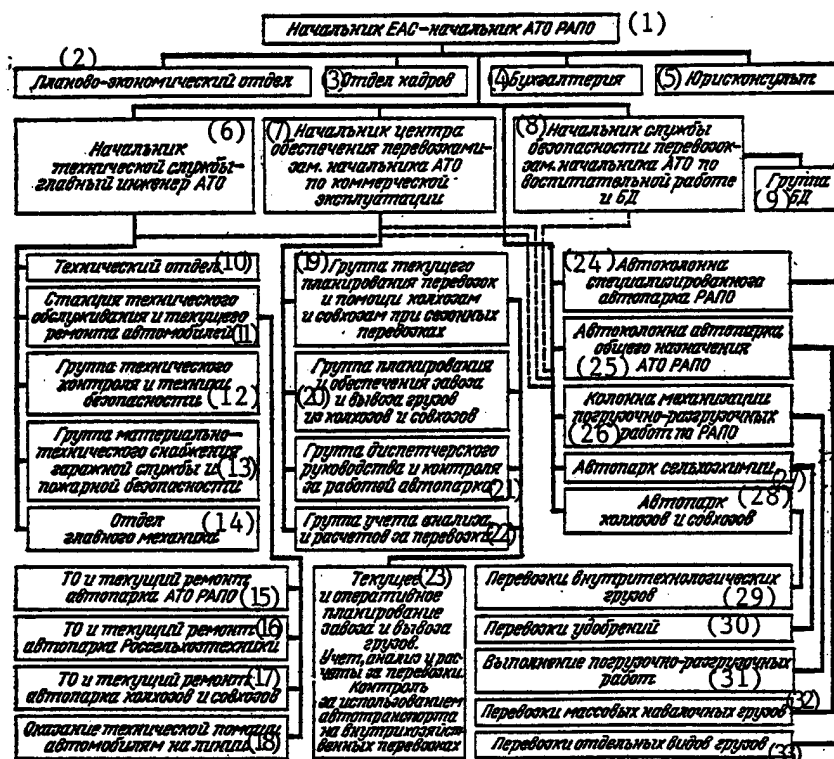
Unlike earlier centers that were organized for controlling haulage during the harvest, the TsOPG is a standing subunit and provides for centralized current and responsive planning for YeAS hauling, ongoing control over bringing freight into and dispatching freight from kolkhozes and sovkhoses and RAPO enterprises and organizations by specialized transport means (mixed-feed carriers, milk carriers, cattle trucks and so on), and by general-purpose trucks of the YeAS's truck columns with the execution of a complex of expeditionary-transport operations, and it also supervises the work of the loading and unloading equipment of the YeAS columns. The hauling of resources for increasing fertility (fertilizers) and their application to the soil can be performed, depending upon the specific conditions of the region, by the YeAS service or by specialized subunits of the Rayselkhozkhimiya [rayon agricultural chemical unit] with close coordination of the operations. Hauling construction freight for RAPO enterprises is organized in similar fashion.

Along with this, TsOPG workers constantly coordinate transport work with common-carrier motor transport enterprises for the delivery of general-purpose freight to kolkhozes, sovkhoses and RAPO enterprises and organizations. Moreover, the TsOPG extends help to kolkhoz and sovkhos garages in planning haulage, in allocating the transporting and loading and unloading equipment of the YeAS motor-vehicle column for the large-scale importation and dispatch of within-farm freight, and it also extends help to organizations through the YeAS technical service, and in some cases also the performance of technical servicing and repair of motor vehicles and mobile loading and unloading equipment. TsOPG workers also provide for the accounting, analysis and settlements

Organizational Structure of Unified Motor Transport Service (YeAS) of Klin RAPO [Rayon Agro-Industrial Association].

— administrative subordination.  
 - - - functional subordination.

1. Chief of YeAS--chief of ATO (Motor Transport Organization) of the RAPO.
2. Economic planning section.
3. Personnel section.
4. Auditing.
5. Legal counsel.
6. Chief of technical servicing--chief engineer of ATO.
7. Chief of haulage support center--deputy chief of ATO for commercial operations.
8. Chief of haulage safety service--deputy chief of ATO for education and BD [traffic safety].
9. The BD group.
10. Technical section.
11. Technical servicing station and current motor-vehicle repair.
12. Technical monitoring and work-safety group.
13. Group for providing materials and equipment, garage service and fire safety.
14. Chief mechanical-engineer's section.
15. TO [technical maintenance] and current repair of vehicle fleet of RAPO's ATO.
16. TO and current repair of Rosselkhoztekhnika [RSFSR Agricultural Equipment Association] vehicle fleet.
17. TO and current repair of kolkhoz and sovkhoz motor-vehicle fleet.
18. Extension of technical assistance to vehicles on the line.
19. Group for current planning of haulage and assistance to kolkhozes and sovkhozes during seasonal hauling.
20. Group for planning and supporting the importation of freight into and the dispatch thereof from kolkhozes and sovkhozes.
21. Group for central supervision and monitoring of the vehicle fleet's operation.
22. Group for accounting, analysis and computation of haulage.
23. Current and responsive planning for bringing in freight and dispatching freight. Accounting, analysis and computing of hauling. Monitoring the use of motor transport for within-farm haulage.
24. Motor-vehicle column of RAPO's specialized motor-vehicle fleet.
25. Common-carrier motor-vehicle column of the RAPO ATO vehicle fleet.
26. RAPO column for mechanized loading and unloading work.
27. Motor-vehicle fleet for agricultural chemicals.



[Key continued on next page]

28. Motor-vehicle fleet of kolkhozes and sovkhozes.
  29. Haulage of internal operating-type freight.
  30. Fertilizer hauling.
  31. Performance of loading and unloading.
  32. Haulage of large-scale bulk freight.
  33. Haulage of various types of freight
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for haulage work and for YeAS services, and it executes the instructions of and reports to the RAPO soviet.

Thus, the Unified Motor-Transport Service is a new type of motor-vehicle transport organization in the countryside, which coordinates and carries out all types of motor-transport operations that support kolkhozes, sovkhozes and enterprises and organizations in the environment of a functioning RAPO.

NIIAT, jointly with VIM and in collaboration with the Main Agricultural Administration of the Moscow Oblast Ispolkom, is now completing development of a design for organizing motor-transport support for the Klin RAPO and of certain other Moscow Oblast rayons. The proposals developed were examined and approved by the kolkhozes, sovkhozes and the Klin RAPO soviet, and this year they are being introduced.

An analysis of the effectiveness of the measures developed testifies that, along with full motor-transport support of the Klin RAPO, the application of progressive technologies for hauling freight, which make wide use of a specialized motor-vehicle fleet and the integrated mechanization of loading and unloading work, is paving the way for complete and modern freight haulage. Calculations indicate that about 200 motor vehicles and drivers will be released and 600,000 rubles will be saved per year by a reduction in transport outlays. The consumption of motor-vehicle fuel will be reduced by at least 250-300 tons. Along with this, undoubtedly, safety of hauling will be raised, and the accident rate on rural roads will be reduced.

Work on the motor-vehicle transport support system will later embrace matters of raising the degree of motivation and mutual responsibility of all participants and of giving them material incentives for the final result of the haulage, depending upon the type and nature of the freight, with the mandatory proviso that tasks be fulfilled on time and completely, with the freight protected against damage and losses.

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## RAIL SYSTEMS

### RAILWAYS MINISTRY COLLEGIUM MAPS TECHNICAL ADVANCES

Moscow GUDOK in Russian 13 Jul 85 pp 1-2

[Report by N.S. Konarev, minister of railways: "Policy of Acceleration of Technical Progress--Expanded Session of the Collegium of the Ministry Railways"]

[Text] It was reported in GUDOK that an expanded session of the collegium of the Ministry of Railways was held on 9 July, which discussed ways of raising the technical level of railroad transport and the quickest conversion of the sector to an intensive course of development in light of the decisions of the April (1985) CPSU Central Committee Plenum and the positions and conclusions enunciated by General Secretary of the CPSU Central Committee M.S. Gorbachev at the conference on questions of acceleration of scientific and technical progress at the party's Central Committee.

Minister of Railways N.S. Konarev presented a report.

V.I. Dolgikh, candidate member of the CPSU Central Committee Politburo and secretary of the CPSU Central Committee, spoke at the meeting.

The following railway chiefs took part in the discussion: Donetsk--A.M. Kozhushko; South Urals--I.P. Vorobyev; Tselin--N.K. Isingarin; Moscow--I.L. Paristyy; adjuster of track-laying machines, outstanding inventor of railroad transport M.D. Matveyenko; director of the All-Union Scientific-Research Institute of Railway Transport A.L. Lisitsyn; director of Giprotranssignalsvyaz' Institute A.F. Slyusar; secretary of Bataysk Center Party Committee V.P. Rudenko; rector of Dnepropetrovsk Institute of Railroad Transport Engineers V.A. Kablukov; chief of Main Computer Center of the Ministry of Railways G.S. Ivannikov; chief of planning and design buro of Main Track Administration N.N. Yelsakov; chairman of the Railroad Committee of the Railroad Transport Workers Trade Union of Belorussia A.Ya. Borodayenko; fitter of Moscow Locomotive Sorting Depot, outstanding efficiency expert of railroad transport V.A. Gololobov; chief of Daugavpils Locomotive Repair Plant V.V. Zharkov; Deputy Minister of Railways A.N. Bevzenko; chief of Moscow Subway Yu.V. Senyushkin; deputy chief of track-maintenance department of South Urals Railroad, RSFSR Honored Inventor V.Kh. Balashenko; and deputy chairman of USSR Gosplan V.Ye. Biryukov.

The following participated in the work of the collegium: chief of the CPSU Central Committee Department of Transport and Communications K.S. Simonov; chief of the USSR Council of Ministers Affairs Administration Transport Department K.V. Kulayev; chairman of the Railroad Transport and Transport Construction Workers Trade Union Central Committee I.A. Shinkevich; responsible officials of the CPSU Central Committee and the USSR Council of Ministers; workers of ministries and departments; heads of railway-transport economic, party and trade-union organizations; and scientists, leading specialists and innovators of production.

Acceleration of scientific and technical progress and on this basis intensification of production constitute a basic question of the party's economic policy at the present stage. The editors believe that the materials of the expanded session of the collegium published today can be used by propagandists, agitators and speakers during the period of preparation for the trade holiday of workers of our sector--the Railroad Worker's Day.

The editors addressed a request to a number of the participants of the expanded session of the collegium to prepare articles based on their speeches for GUDOK which they hope to publish in the immediate future.

In the report of Minister of Railways N.S. Konarev and in the speeches of the participants of the expanded sessions of the collegium, it was pointed out that the conference held 11-12 June at the CPSU Central Committee on acceleration of scientific and technical progress was an important event in the life of the party and all the people, possessing great political, economic and social importance.

Acceleration of scientific and technical progress is considered by the party as the chief direction of economic strategy and as a most important factor in boosting the effectiveness of our entire national economy. A tempestuous scientific and technical revolution is taking place in the world. Every major discovery and innovation creates conditions for a leap forward. It can be said that the scientific and technical revolution is developing according to geometric progression.

And today, the problem is not simply acceleration of growth rate but a new quality of growth and of a steep turnabout in the development of the economy. Scientific and technical progress must become the strategic line of development. If this is not done now, the possibility exists of being hopelessly left behind. Delay is ruinous and impermissible.

The tasks set by the party found deep understanding and unanimous full support among the Soviet people and our friends abroad. Now it is necessary to implement in practice the worked out policy. It should be a matter for the whole party and all the people, a first-priority obligation for each manager, every communist and every worker.

It is important for party and trade-union organizations of transport, for managers, specialists efficiency experts and inventors and all railroad workers to find their place in a single operation and take a most active part in this great crusade for the heights of scientific and technical progress.

It is necessary for each one to become convinced and to realize his personal responsibility for putting the developed policy into practice.

The most important obligation of railroad workers is well known. It is to satisfy without interruption, fully, on time and with a minimum of expenditures the transportation needs of the national economy and the population. And for the performance of this obligation, it is first of all necessary to effectively utilize the existing technical potential. The highest priority task is to fulfill the 1985 plan and to worthily greet the 27th CPSU Congress.

The first half of the year is over. The positions which must be attained in the first half of the year for volumetric, qualitative and economic indicators were determined rather precisely. Losses in the first quarter and the inadequate rate of making them up in the second resulted in arrears of 46 million tons of freight. Lagging shipments are particularly marked of hard coal, timber, ore and metal raw materials, products of machine building...

In order to fulfill the annual plan, it will be necessary to ship daily an average of no less than 11,096,000 tons of products in the second half of the year. Rolling-stock exchange will have to be 380,000 cars during the period of track work and for the rest of the time--410,000 cars daily or an average of no less than 390,000 cars a day. It will be necessary to significantly speed up unloading, to boost static load and to accelerate the turnaround of cars. This is required for fulfilling prescribed targets and the creation at enterprises of necessary winter stocks of fuel and ore-and-metal raw materials. In this way only will it be possible to rectify the economic situation of railroads, enterprises and the sector as a whole.

Railroads owe the budget 170 million rubles; targets are not being met for cost of shipments, profits and labor productivity. And in order to correct the situation, it will be necessary in the second half of the year to reduce the cost of shipments by 3.3 percent versus the plan and to increase labor productivity by 3 percent.

Without all-out intensification of work, it will not be possible to attain such large volumes of shipments and such high qualitative indicators. And everyone must understand this. The chief components of success and the most important reserves are well known. A program of practical utilization of these reserves has also been worked out.

We must not lose the slightest opportunity of boosting static load. So far since the beginning of the year it has been 2.1 tons below planned load. In May and June, it was possible to reduce this gap to a ton. And the experience of the leading railroads shows that the outlined goal is entirely attainable. This will make it possible to ship 30 million tons additionally before the end of the year.

In the second quarter versus the same period last year, load volume in cars diminished. As a result, 11 million tons of freight failed to be shipped.

There are still many interruptions in movements of trains. For the fuller use of car traffic volume on heavily traveled directions, possibilities of increasing train loads are far from being fully employed. It was planned to boost it by 116 tons, but in June an increase of 92 tons was reached. We need to more energetically utilize this most important reserve. During 1983 and 1984 it was possible in practice to assimilate the significant growth of shipments and to improve the most important qualitative indicators primarily as a result of a sharp increase in train loads.

Varying operation of technical equipment results in large losses. A certain improvement was made in the direction of increasing its reliability following the winter. But the level of reliability of locomotives, cars, track and power-supply systems, railway signaling and communication is far from having been reached. The program of measures worked out by the Ministry of Railways for improving the operation of transport equipment and mechanization and automation of operations in its technical servicing and repair work will have to be fulfilled.

Thus the first-priority task is to fulfill the annual plan with honor and, despite all difficulties, to achieve shipment of 3,950,000 tons abroad.

The coming 12th Five-Year Plan has to be a breakthrough stage in intensification of production, boosting of its efficiency and acceleration of the rate of economic and social development. The ministry has outlined and communicated to the railroads the chief positions that will have to be reached by 1990.

When goals have been set and positions designated, it will be possible to determine what new technology and equipment will have to be adopted for their attainment. It will be necessary to first of all systematically change the basic direction of the network over to an intensive technology of operation.

At the present time, all our two-track lines are operating in a far from highly productive manner. Yearly freight track volume on the lines of Omsk--Petrovsk--Kurgan--Chelyabinsk and Sverdlovsk--Perm--Lyngasov is twice as high as on the line Sverdlovsk--Druzhinino--Yudino, 1.6-fold greater than on the line Srednesibirskaya--Irtyshskoye and 1.4-fold greater than on the line Ilovaysk--Tikhoretskaya. The gap is also significant on one-track lines.

Scientists and specialists have also determined that with the organization of heavy-load and rapid-movement, boosting of the static load of cars, automation of control of train movements, basic operations in reclassification of freight traffic volume, boosting of reliability of technical equipment, improvement of their operation and mechanization and automation of repair work, the possibility exists of boosting the productivity of two-track lines to 180-200 million tons a year and of one-track lines--to 45-50 million tons a year in both directions. And at the same time, to eliminate to a significant degree gaps in line loads.

To attain these objectives means to keep pace with scientific and technical progress and to achieve a decisive success in intensification of our transport production.



Capital investment, funds, resources and equipment provided to transport should be allocated there where the interests of the national economy require them and where it would be possible to obtain the quickest and most significant yield in raising the level of shipments. Decisively eliminating losses, it is necessary to increase throughput, carrying and processing capacity of railroads and the capacities of the sector's enterprises. Here two major directions should be differentiated.

The first is construction of new and reconstruction and modernization of existing lines, junctions and stations, locomotive and car depots, installations of electric power, automatics and communications, freight and passenger service facilities and the sector's plants with elimination of bottlenecks and disproportions.

The second is development and introduction into the transportation process of operation and repair of intensive-technology technical equipment, operating equipment and automated control systems. Work in both of these directions needs to be conducted in parallel with their optimum combination. At the same time, the chief attention should be directed to the reconstruction of existing capacities and their technical and technological reequipment.

It is necessary for this purpose to fundamentally revise the strategy of capital investment and its structure. This is one of the chief objectives. It is necessary to radically change the attitude toward planning, financing, resources provision and organization of operations in implementation of scientific and production programs of technical and technological reequipment. A part of such programs has been formed and is being realized, but the development of a number of programs, both general and for specific operations, should be completed as soon as possible and immediately introduced. A decisive psychological reorientation from the habitual desire of creating new capacities for intensive utilization of existing ones is needed.

It is necessary to decisively reject allocation of funds and resources for development and reequipment according to the principle: everyone gets a little and from the practice that he who makes the most noise receives more rather than the one who has the greater need.

It is important to concentrate capital on the development of the most important facilities and implementation of first-priority scientific and technical programs and to solve special-purpose network problems, moreover comprehensively and in short periods of time.

In the ministry, it would be expedient to centralize the solution of the strategic tasks of providing for shipments on scheduled directions and raising the technical level of the sector and its operations. Railroads, divisions and enterprises should be given greater independence in the solution of local problems of development and reequipment so that their hands are not bound with dictate from above. Chiefs of railroads, for example, should have the possibility of concentrating their resources on the most acute road problems rather than dissipating them on many objects according to the plans of main administrations.

Such a flexible and strictly controlled strategy of capital investment should be created as quickly as possible. The existing practice leads to serious mistakes. New lines and facilities are sometimes being built without having been carefully thought out or coordinated. The desire to acquire in one fell swoop as many new facilities as possible results in long construction time. Instead of 2 or 3 years, 8 to 10 are spent without the necessary return.

There are also many shortcomings in the solution of problems of reequipment of the sector. At the meeting, glaring facts were cited. Because of the sluggishness of specialists of the Ministry of Railways, electric train ER200 stood and rusted without operating for 12 years!

And how much energy was spent on arguments about locomotives with motors without commutators. Soviet specialists were among the first in the world to start this work, but to this day there are no domestically produced machines of this type. Some foreign firms have already moved ahead.

Since 1965, there have been arguments as to which diesel engine is best. They argued so much that they were left without promising diesel engines. Normal cooperation with the Ministry of Heavy and Transport Machine Building has been restored only now, and the work has started to move forward. But what a price for the permitted irresponsibility? Diesel locomotives with a capacity of 4,000 and 6,000 horsepower should have been basic since the '70s, but they are still not on track.

Unfortunately, even today it is still possible to run into technical and scientific conservatism, intolerable arrogance and even open vindication of one's own personal interests.

A great deal of attention was devoted at the collegium's meeting to the accomplishment of first-priority scientific and production programs of intensification of production. Special importance was attached to the program of development of heavy-load traffic. It provides for boosting the average load of a train over the five-year period by not less than 500 tons. What is the strategy here?

Today with a total length of the network of railroads comprising 145,000 kilometers, trains with a load of 60,000 to 800,000 tons with a locomotive at the head have been regularly running up to now distances of 10,000 kilometers. In the future, running distances of such trains should be expanded to 60,000 kilometers. This would provide an increase of 95 tons for the average load of a train.

The operation of trains connected and permanently formed with locomotives dispersed along the length of the formation with a load of 8,000 to 16,000 tons has been practiced very rarely so far. We are faced with the task of regularly running such trains over distances of 100,000 kilometers and raising as a result of this the average load of a train by another 300 tons.

And finally as a result of expansion to 43,000 kilometers of running distances of connected sections of empty cars with a length of 400-480 axles with

locomotives at the head and operated by a single brigade, it is planned to raise the average load of a train by another 105 tons. This is what an addition of 500 tons amounts to.

Much in the development of heavy-load traffic still remains to be worked on. Specialists have to more quickly complete the creation of telemechanical systems radio-operated locomotives dispersed in trains. It is necessary to solve the problem of running connected trains at a temperature below -30 degrees Centigrade. A most effective system should be worked out of handling trains with an increased load and length for entire lines.

The program under discussion provides for ending the creation and establishment of series production of powerful electric and diesel locomotives, four-axle cars with an axle load of 25 tons as well as eight-axle tank cars and gondola cars with a load capacity of 125-130 tons and for the solution of a number of other questions.

The final goal set in this program is to have an average train load with the highest limits in world practice.

All the possibilities of increasing the static load of a car have far from been realized. The gap between a car of average load capacity and its actual load exceeds 7 tons. This is a large reserve and it needs to be maximally utilized in the 12th Five-Year Plan. Many methods of compacted loading have been proposed. It is necessary to organize their widespread introduction and to include in this work all receiving and delivery agents and senders of freight. So far the gap in the static load of cars in sending one and the same products on different railroads reaches tons and sometimes even more.

The social and economic importance of the program of boosting the speed of passenger and freight trains is great. It is planned to reduce the time of running 87 long-distance passenger trains on 9 network lines over a distance of approximately 37,000 kilometers, including the Transsiberian from Moscow to Vladivostok, the Leningrad, Brest, Kiev, Riga and Crimean lines. It is planned to boost the speed of trains to 140-160 kilometers an hour on lines with a length in excess of 10,000 kilometers and up to 200 kilometers an hour--on sections with a total length of 900 kilometers.

The preparation of lines for accelerated operation of trains is now being purposefully conducted for the third year. And there are results. As of June, Rossiya Express has covered the distance from Moscow to Valdivostok one day faster. But this is not the limit. It is necessary to cut down the time en route of the country's chief train by another two days.

In the coming five-year plan, it is contemplated to significantly speed up the movement of freight trains. With conversion of rolling stock to ball bearings, and this needs to be accelerated in every possible way, the possibility is opened of boosting maximum speed of freight trains to 120 kilometers an hour.

The program of boosting train speed is a capacious one. The cost of the work will amount to more than 2 million rubles. Basic expenditures will be for

capital repair of track and artificial structures. Much needs to be done to make ready cars, locomotives and electric power installations and to reorganize automatic blocking and locomotive signaling.

Boosting the speed of movement is an important direction of technical progress and of intensification of transportation. And this has to be done energetically, purposefully, step by step, marking one position after another.

In practice, all spheres of operation of railroad workers and most technological processes and operations have to be encompassed by programs of mechanization and automation of production and control.

On the basis of modern computer technology, network automatic control systems are being created, first of all for the transportation process. By 1987, the creation of an operational information control system capable of controlling the operational situation, assigning locomotives and locomotive brigades and solving other problems. It is planned to create in the Ministry of Railways on the basis of this system an automated dispatching control center. Road dispatching centers are also being created, particularly on the Donetsk Railroad.

A great deal of work remains to be done to establish reliable ways of automatic reading of information from moving rolling stock and to solve many other complex problems of automation.

Big plans have been outlined. The work ahead will be painstaking and very strenuous. Without waiting for its completion, we now need to more effectively utilize the existing computer network and to more energetically prepare an optimal structure of organization of control for the new systems.

It is well known that automation provides the necessary effect only with a balanced organizational system. This most important requirement was disregarded for a long time at the ministry and at most of the railroads, although useful experience was acquired, particularly on the Belorussian Railroad.

If we were to judge on the basis of the strictest demands, there is as yet no serious payoff from computer technology in railroad transport. The Ministry of Railways is among the laggards in the field of computerization of control of production of ministries. Work on the creation of an automated railroad-transport control system has been extremely dragging on.

Speakers at the meeting of the collegium showed with specific examples how thoughtlessly and wastefully the introduction of computer technology has been conducted in transport. The psychological barrier in the mode of thinking of management has been far from overcome. In the actual organization of the Ministry of Railways, many have a poor idea of computer technology and judge its possibilities by hearsay. They are fearful of electronic computers and underestimate their possibilities of optimizing the transport process.

Is this the way things should be, when in Moscow there are six railroad computer centers, and each one of them goes its own way, and not economically.

They are not only not linked up, but the electronic computers are not even interchangeable. Should one of the computer centers go out of operation, it would not be possible to use another. This is not good management!

An automatic control system is being created for operation of the transport process, but no method exists as yet for automating dispatching control for large lines. Having set their aim on the collection and analysis of statistical information, the computer people literally inundate workers of control services with various data instead of helping them to adopt optimal operational solutions. The transition to machine transport documentation is being excessively delayed.

Reorganization of control at the ministry itself is proceeding extremely slowly. At the Main Traffic Administration, only 15 percent of the personnel are directly employed in control of transportation. More than half of the main administration's organization collects various data found in electronic computers and compiles from them various items of information. What sort of procedure is this?! We can no longer tolerate such use of specialists.

Effectiveness of supervision of the transport process emanating from the Ministry of Railways today is extremely low. Operational decisions made here lag behind the course of shipments. Managers of the Main Traffic Administration and the Ministry of Railways begin to study a plan for the current 24 hours at 9 o'clock Moscow time when more than half of the accounting day has passed and there is little that can be done in the way of change. As a result, most of the operational instructions remain suspended in the air. It is no accident that stereotyped reports come from the railroads: "Today it is impossible to complete the targets, tomorrow we shall correct this."

Does such planning make sense? Evidently the time has come to study the plan for the next day with control of target fulfillment according to the plan approved the day before. Today forecasting a day ahead of time and even longer is an imperative necessity. And this must be started without waiting until the "final nail is driven" into the information control system.

For the coming five-year period, it is planned to allocate considerable funds for the introduction of automated systems. And the result must be substantial. Automation of control has to speed up car turnaround time by 3-4 hours, to increase locomotive productivity by 2.8 percent and to boost labor productivity by 3-4 percent. That this is quite realistic is most convincingly shown, for example, by the new technology of delivery and shunting of local cars introduced by the All-Union Scientific-Research Institute of Railroad Transport at Beskudnikovo Station. Determination on an electronic computer of optimal schemes of forming cars, uncouplings, the sequence of providing them on access routes and shunting of empty cars has given astonishing results: in the course of a month, the downtime of cars was reduced by 30 persons and on some days, it was reduced by as much as 50 percent! GUDOK has already described this instructive experience.

The keenest attention at the collegium's meeting was devoted to programs of creation and introduction of equipment of railroad automatics. Reference was

made to new automatic-blocking systems, electrical centralization on a progressive element base, automation of sorting processes and radical improvement of radio communication and automatic locomotive signaling.

It was pointed out that many of these important developments are not conducted purposefully, frequently without coordination, disparately and very slowly. Although problems of railroad automatics were repeatedly examined by the collegium and the scientific and technical council of the Ministry of Railways, unfortunately technical policy in this field has as yet not been clearly delineated.

Outwardly, disputes among the specialists of the Main Administration of Signaling and Communication, the Giprottrnssignalsvyaz Institute and the All-Union Scientific-Research Institute of Railroad Transport have seemingly stopped, but the "cold war" is continuing. It does harm to the work and delays introduction of new equipment. At the main administration and at the All-Union Scientific-Research Institute of Railroad Transport developments are frequently conducted in parallel. They rely far from always on substantive scientific research and on serious design development. The main administration's managers are negative to "alien" developments even where they are the best and put up barriers to getting them into series production.

One cannot but be surprised as to how it could have come about that among transport scientists and specialists no one in recent years has seriously engaged himself in modernization of automatic locomotive signaling, which was created back in 1935. Comrade Lobovkin, an operator from Lobnya Depot, undertook this on his own initiative. He invited his electronic friends from a nontransport organization and together with them developed a portion of the apparatus of coded automatic locomotive signaling on a noncontacting element base. Specifically, an alerting instrument was proposed suited for an operator working by himself.

This is what happened: the specialists did not consider it necessary to engage in such an important undertaking, but an operator undertook this difficult work. The innovating operator can only be congratulated, but it is a serious reproach to the managers of the Main Administration of Signaling and Communications and to the scientists and specialists.

The opinion has been stated that it would be useful to create in the organization of the Ministry of Railways a coordinating organ which would speed up in every way possible the development of progressive automatics equipment and would be vitally interested in the introduction of everything that is new and progressive that would provide concrete benefits to transport. Such an organ should unite the efforts of the specialists of scientific-research and planning-and-design organizations, plants and railroads and efficiency experts and inventors.

The development, modernization and reequipment of stations are acquiring special importance today. Specifically, stations on the most important lines have become a bottleneck in the growth of throughput and transport capabilities. This was shown in concrete figures at the meeting of the collegium. How is the capacity of stations increased?

A shocking example familiar to the readers of GUDOK of modernization of Yasinovataya Station was cited. True, the chief of the Donetsk Railroad assured us that this matter would be corrected in the very near future. But the mistake was costly! Not only material but moral damage as well was inflicted.

Other cases were also cited of ill-considered, extremely slow modernization of stations and other important facilities. Thus on the line Moscow--Vladimir--Gorkiy it was possible to handle trains with a load of 6,000 tons led by a single locomotive. The block lies in the inadequate development of Vladimir Station. The work could have been long completed and now be producing tremendous results. But it has practically just been started and is proceeding at a snail's pace.

We can no longer tolerate the disproportionate development of neighboring railroads. If we only knew exactly what our neighbors were doing and planning, railroad chiefs have said, we certainly would have resolved differently many questions of modernization of our own operation. In allocation of capital investment, the entire line must be considered without fail and at the same time the whole complex of questions for achieving planned growth of throughput, transport and handling capacity has to be solved simultaneously.

It is quite intolerable when in the startup of new facilities and modernization of existing ones obsolete technology still remains for all practical purposes. The following example was given. In Brest, they built a building for the place where cars are prepared for loading. The work is now being done under a roof, but the people as before are provided only with sledge and ordinary hammers and also with pliers.

Serious mistakes are tolerated in planning modernization and construction of new facilities. The plan of projected work is not thought through or validated as it should be. Hundreds of plans into which the labor of thousands of skilled specialists has been invested, are allowed to lie on the shelf. Such waste is intolerable.

The quality of the plans far from satisfies modern requirements. Frequently, unprogressive decisions are made. The planners stick to the beaten path where there is less risk. It was stressed at the meeting that it is essential to depart from the petty, which provides little in the way of improvement, to set our stake on revolutionary changes in equipment, technology and organization of production and to aim at the very latest achievements of science and technology.

Such a guideline should also be followed in ordering new equipment, especially locomotives and cars. In recent years, powerful and reliable electric locomotives have been created in close cooperation with specialists of the Ministry of Electrical Equipment Industry. Cooperation with Czechoslovak enterprises is fruitful. Soviet railroads receive from them modern passenger electric locomotives and shunting diesel locomotives.

At the same time, transport by no means receives those freight cars, diesel locomotives and diesel engines that are required today. And this largely is the result of unfinished work and absence of principle on the part of specialists and managers of main administrations, the All-Union Scientific-Research Institute of Railroad Transport, as well as of the railroads where the new equipment is tested. The fact is that transport specialists work out technical requirements which the new equipment must satisfy. They test experimental models and provide them with a start in life. How does it then happen that after all this, we get substandard, unreliable, uneconomical, metal-intensive and repair labor-intensive equipment for operation?

It is time for our specialists in ordering new equipment, its development, testing and delivery to assume a principled position. Operating railroads with their tremendous load should get the most modern, most effective and reliable equipment. It would be useful to create a commission at the Ministry of Railways which would handle the ordering of new equipment.

An important direction of technical progress is mechanization of labor-intensive operations in all sectors of railroad operation. Programs of mechanization of loading and unloading operations, repair and maintenance of track, cars and locomotives have been worked out. And it is necessary to see to it that they are systematically and purposefully implemented.

Containerization and packaging of shipments open up broad possibilities of mechanization of freight operations. But this possibility is far from fully utilized. The container park is growing much faster than the volume of shipments in them. This puts us on guard. It is necessary to seriously go into the reasons for such a situation.

We should introduce vibrating equipment for compacting loads and quick unloading of frozen freight more energetically. It is necessary to speed up the creation of mechanized complexes for mass unloading of coal, grain, vegetables and other bulk freight. Incidentally, the All-Union Scientific-Research Institute of Railroad Transport has devised such a machine for potatoes. But it has not found wide-scale use.

It was pointed out that last winter many difficulties arose because of disproportions in the development of basic production and transport services of many enterprises. Thousands of cars stood in the Donbas because there were few cold-protection enclosures and car dumpers.

Very much remains to be done in mechanization of repair work in all parts of car operation, especially at technical servicing locations. Many outstanding repair mechanisms have been created, but their introduction is dragging on. This is the result of unconsidered technical policy of former managers of the railroad-car main administration. Today their mistakes have to be corrected, and the more quickly, the better.

In repair production, especially in our plants, modern robot technology needs to be more boldly and decisively introduced. For example, the employment of a robot in repair of the axle-box unit has made it possible to effect a five-fold increase in labor productivity.



Good machines and mechanization equipment have been created for track repair and maintenance. But their supply is manifestly inadequate. And mechanization of labor-intensive track work is becoming an increasingly acute social problem.

Programs of mechanization, automation and introduction of new equipment are the basis for lightening the labor of railroad workers and boosting their productivity. In the sector, a significant portion of the operational staff is employed in manual labor. In the forthcoming five-year period, it is planned to significantly ease the working conditions of about 220,000 persons.

Calculations show that with energetic mobilization of reserves, railroad transport in the next five-year period will already be able to reach the highest labor-productivity level in the world. And this task must be solved without fail.

The most widespread dissemination of progressive experience and innovative initiatives, approved first of all by the CPSU Central Committee, can and must produce a major effect. The main speaker and the others at the expanded session of the collegium devoted a great deal of attention to improving control of scientific and technical progress itself. Here the success of the matter is largely resolved by efficient organization. And how are things turning out for us?

Specialists of main administrations and the All-Union Scientific-Research Institute of Railroad Transport--the sector's main scientific and technical center--are engaged in a tremendous number of various developments. The plan for introduction of new equipment for 1985 provides 5,743 measures costing 255.5 million rubles. It, of course, contains major effective measures connected, for example, with increasing the average load of a train. But the average return for all the measures per ruble of outlay amounts to only 38 kopecks. The Main Administration of Signaling and Communication, for example, is implementing 613 measures with an average yield of 16 kopecks per ruble of outlay. The main traffic administration has 325 measures with a yield of 21 kopecks. Why is this so? Only because chief engineers and leading specialists of main administrations and managers of the All-Union Scientific-Research of Railroad Transport do not go into the subject matter of research studies and developments. Sometimes without looking they include them in the plan, but when the work is completed, it turns out there is nothing to introduce.

The potential of VUZ science is being ineffectively utilized. A large portion of scientists with the highest qualifications--doctors and candidates of sciences--works here. But they are being weakly included in the solution of problems dictated by the interests of production. The connection with fundamental and academic science should be decisively improved. Wide-scale use of its ideas and discoveries must become a powerful accelerator of technical progress in railroad transport.

Major difficulties arise because of an inadequate experimental and experimental-design base. The All-Union Scientific-Research Institute of

Railroad Transport should possess an experimental base for testing all means of railroad automatics and automated systems and an experimental testing ground for checking equipment and subway structures.

Today when special importance is attached to technical and technological reequipment of all parts of transport services, the role of chief engineers of the railroads is enhanced. They must be in charge of this work.

At numerous railroad sectorial laboratories, it would be useful to organize effective design and technological units capable of solving questions of tying in at enterprises model plans of automatated systems, introduction of effective technologies of the transport process and repair of technical equipment and capable of supervising installation and adjustment of new equipment.

And, of course, such a large unit as a railroad ought to have its own experimental production operation where it would be possible to embody in metal the ideas and developments of specialists and innovators of production. This must be a truly experimental base and not a small-series semihandicraft production operation as is now the case. We should concern ourselves with bringing in here the highest qualified specialists and workers, working out a system of remuneration of their labor, material and moral stimulation and solving financial and supply problems.

For mass production of technological gear and equipment wider use should be made of the transport industry's resources. It was proposed to specialize at one or two plants or at least to organize specialized shops at a number of plants.

The basic directions and chief tasks of speeding up scientific and technical progress in railroad transport have been clearly determined. Now is the time for the practical embodiment of all that was designated. Strenuous, long-term work lies ahead. And all railroad workers must become actively involved in it.

It was emphasized at the meeting of the collegium that we cannot approach the solution of problems of acceleration of scientific and technical progress with old measures. Practical work on the railroads and in the departments and enterprises must begin with a clear determination of time periods for the fulfillment of concrete measures. It should be remembered: success can be achieved only through the efficient organization of work and the establishment of control over the implementation what has been mapped out.

Acceleration of technical progress is the chief route to the attainment of the main goal of raising the efficiency of the operation of railroad transport to the highest world level and reliably providing transport services for the national economy and the population.

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CSO: 1829/244

## RAIL SYSTEMS

### CAUCASUS MOUNTAIN RAILROAD CONSTRUCTION PROGRESS

Moscow PRAVDA in Russian 19 Jun 85 p 2

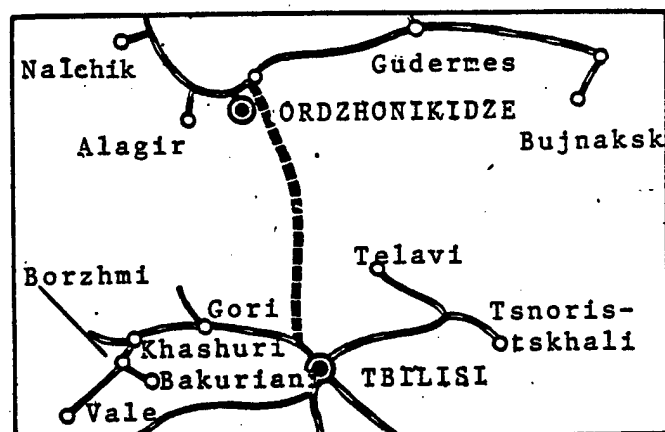
[Article by special PRAVDA correspondents G. Lebanidze and I. Shatunovskiy, Great Caucasus Mountain Range, under the rubric "Map of Construction Projects": "Road Beyond Clouds"]

[Text] Having taken off, a silver helicopter headed north to where the great Caucasian Mountain Range partitions the earth from sea to sea with its mighty palm. The streets of beautiful Tbilisi melted behind the horizon and were filled with a soft morning light. The whimsical shadow being cast by the aircraft is already running along the valley of the swift Aragvi River. The overhanging rocks press the marvelous valley more and more, and under their onslaught, continuous violence yields a place to green islands of gardens, and the well-groomed settlements with stone houses with carved wooden verandas stand out even more sharply.

At the left of the Zhinvalskoe Reservoir the Georgian Military Road swerves to the left, while to the right the harsh kingdom of the mountains asserts itself. Veteran aviators S. Kurtyan, aircraft commander, V. Dzhatov, pilot, and N. Potapov, flight instructor guide the aircraft through the gorge between the overhanging rocks. It was 30 degrees Celsius in Tbilisi, but here there is snow. One seldom has the chance to see how mountain rivers are formed. Here and there from under white caps, frothy streams burst forth, and working their way downward along the gullies, they gain indomitable force and power...

We are flying over the path of the future Cross-Caucasus Railway. A railway in the midst of desolate rocks, dizzying heights and bottomless gorges. Is this even possible?

Several days ago in Tbilisi we met N. Svanishvili, a renowned specialist who has been designing transportation links for 56 years. At various times, many kilometers of railroad lines were laid according to his plans. Now Nikolay Vasilovich is the chief design engineer of the Cross-Caucasus Railway. On his office walls are maps, sketches, blueprints and tables of the primary indices of the volume of the impending work.



Nikolay Vasilevich led us to a sketch of the Caucasus Railway. His pointer slid from Rostov-on-the-Don down to Tuapse and Sukhumi, and abruptly turned east and stopped near Tbilisi.

"This is how the Transcaucasian Passenger Railway now runs," he said, "but the freight trains take an even longer route." Now the pointer moved from Rostov to the east, passing Armavir and Makhachkalu to Baladzhary on the Apsheronskiy Peninsula, then it turned to the west. "As you see, both present routes skirt the Great Caucasus Mountain Range, which presses against the coastal zones of the Black and Caspian Seas...

"An intelligent person would avoid the mountain," joked one of us, counting on finding support.

Nikolay Vasilevich smiled: "An intelligent person would conclude that avoiding the mountains is extremely unprofitable, one must go through them."

His pointer once again began to move: "Look here. It is only 180 km from Tbilisi to Ordzhonikidze. Of course it will not be easy to struggle through the Great Caucasus Mountain Range, but here are the technical calculations. Crossing the Caucasus will shorten the passenger route by 150 km, and the freight route by as much as 1,000 km. At present, tens of millions of rubles are spent each year on crossings."

The question is not one of money alone. A CPSU Central Committee Politburo decision noted that the construction of a Caucasus crossing will allow faster development of the republics of the Transcaucasus, and also of the mountain rayons of the Checheno-Ingushskaya and the Severo-Osetinskaya ASSRs. The new railway, however, will have an all-union significance. It will be the southern part of a future more direct and rapid railway leading from the Transcaucasus to Moscow via Michurinsk.

We carefully wrote down in our notebooks everything that Nikolay Vasilevich told us and when we were saying goodbye, he cautioned us: "But please do not ascribe all the credit to our collective. We are working closely with many of

our republic's and country's organizations. Among them are the Tbilisi State Institute for Planning of Highways, Transportation Establishments and Structures (Tbilgiproavtodortrans), the Geology Administration of the Georgian SSR, scientific institutes of the Georgian Academy of Sciences, institutes of the Transcaucasian Institute of Geology and Mineralogy, the Leningrad State Planning and Surveying Institute for the Construction of Subways and Transportation Facilities, the Central Scientific Research Institute of Communications of the Ministry of Transport Construction and the State Institute for Technical-Economic Research and Planning of Railroad Transportation.

"To whom does the idea itself belong? To you?"

"What do you mean! Many wonderful Russian engineers and scientists have considered this."

At the end of the last and the beginning of this century, there were six complete and four preliminary plans drawn up for a line through the Caucasus Mountain Range. Work was conducted on the route, estimates were taken and the designs were presented to the highest tsarist officials for consideration. The government also invited a group of Swiss specialists who had built tunnels in the Alps. They confirmed the possibility of laying a road through the Caucasus Mountains, but alas, the matter went no further.

"The Arkhotskiy Gorge," announced flight engineer R. Varadze when he looked out of the cockpit.

This is the terminus of our journey. The helicopter landed on the green grass on the bank of the Khevsurskaya Aragvi. A brick road snaked its way along the rocks, jumping across the violent and obstinate river on gangways. The road leads to the small settlement of Barisakho where geologists, draftsmen and the first construction crews are located.

We were fortunate. In the settlement we met L. L. Kvartsakhav, director of the Caucasian State Institute for Design of Motor Vehicle Transport Enterprises and Facilities.

"What's new?" Leonid Levanovich repeated our question. "Topographers, geophysists and seismologists are conducting explorations along the entire route. As a rule, they get there by helicopter. They also lift boring rigs into the mountains by helicopter. Master borers Georgiy Gribkov, Vladimir Mikhalkin and Ehduead Agniashvili, working in extremely difficult conditions, have already passed the first hundreds of meters. Quite important data has been received about the geological make-up of the mountain mass through which the Arkhotskiy Tunnel will pass.

The Arkhotskiy Tunnel will begin not far from the settlement of Barisakho. We visited a small point on the sheer rocks.

"This will be the longest tunnel in Europe, it will be longer than 23 km," Leonid Levanovich explained. "It will run at an altitude of 1,400 meters above sea level.

The Arkhotskiy Tunnel will be the longest, but far from the only tunnel in the Cross Caucasus route. The mountains' widths call for another 21 tunnels with an overall length of almost 42 km. Four tunnels will be longer than a kilometer each. One of them will be called Tarskiy (7.5 km).

Tunnels will not only shorten the route. They will reliably cover the tracks from avalanches, landslides, snow avalanches and mud slides. On the open stretches of the route many kilometers of anti-avalanche and anti-landslide culverts will be built. Plans also call for the construction of 72 railroad bridges and viaducts. However, the task is extremely complicated. Suffice it to say that in some of the gorges supports as high as a 20-story building will have to be built. Also, 26 highway and railroad overpasses, 3 highway bridges, 26 culverts totaling almost 3 kilometers in length, 250 small, man-made structures and more than 11,000 linear meters of retaining walls...

On the ground it is completely different than in the helicopter, and one senses what type of job it is building in the mountains. How can one ascend to heights beyond the clouds, if even the mighty beeches and white beeches could not reach, but stopped halfway, exhausted, emaciated and drearily looking at the balding rocks? But for the builders there is more in store than just ascending the heights. To give themselves a starting point for future work, highways must be laid, power lines must be installed, and substations, concrete plants, warehouses, garages, quarries, technical repair points and settlements for the workers must be built. All of this will be built in gorges and mountains where each square meter will have to be taken by force by the tunnelers, drill operators and blasters. Moreover, the natural environment must not be harmed.

Workers from other corners of the country are arriving to help the Georgian, Checheno-Ingushetian and Severo-Osetian workers through whose territory the road will run. The celebrated Baykal-Amur Main Railroad Line-Tunnel Construction brigades will work the Arkhotskiy Crossing together with the Tbilisi subway building organization. Moscow and Kiev, Leningrad and Odessa, and Tashkent and Baku will send their most skillful workers. Workers from Sverdlovsk and Khar'kov, Minsk and Volgograd, Donetsk and Kazan, Chelyabinsk and Rostov will provide the builders with excellent trucks, excavators, bulldozers, cranes and drilling platforms...

"The construction will demand many men and machines, and many millions of rubles," Leonid Levanovich summed up our conversation. "But all expenses will be recouped within 10.5 years after the opening of the Cross Caucasus Railway.

...Years will pass, and the lofty echo will carry the whistles of moving electric locomotives. In the former wild and desolate areas new stations will arise: Ordzhonikidze-1, Tarskaya, Targim, Barisakho, Pshavi, Chargali, Zhinvali and Saguramo. And the passengers on the fast trains from Moscow to Ordzhonikidze to Tbilisi, fascinated by the incomparable beauty of the Caucasian passes, will gratefully remember the people who accomplished the miracle in the mountains.

That is how it will be!

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## RAIL SYSTEMS

### RAILCARS MAIN ADMINISTRATION MANAGEMENT SCORED

Moscow GUDOK in Russian 6 Jul 85 p 1

[Article: "In the MPS Collegium"]

[Text] Improve the main administration's work style.

Chief of the Railcar Main Administration V. I. Kalashnikov reported to a meeting of the MPS [Ministry of Railways] Collegium on improvement of the main administration staff's style and methods of operation.

It was noted that great difficulties are emerging in coping with the rising haulage volume because of errors in organizing the maintenance and repair of railroad cars. Poor preparation of rolling stock for the trip and low sophistication of servicing en route provoke justifiable complaints by passengers. And the situation in regard to insuring train-traffic safety by workers of the railcar activity is far from being favorable. It is clear that not enough attention is being paid to accelerating technical progress, creating rolling stock that meets modern requirements, introducing effective technical resources, progressive technology and work organization and advanced work methods at repair shops and PTO's [equipment inspection points], and increasing the sophistication of production work.

All this, as was emphasized at the MPS Collegium meeting, is the result of serious deficiencies in the style and methods of operation of the Railcar Main Administration staff, primarily its managers. There is no precise, comprehensively thought-out program for solving the complicated problems of developing and improving operation of the agency's activity. Little initiative is displayed in solving problems that are raised by life itself and by work practice. Performance discipline is poor. Deadlines for document preparation are regularly violated. Proper monitoring of implementation of the decisions that have been adopted is not arranged for.

The main administration's staff work is in need of radical improvement. Otherwise it can lose the reins for controlling a large complicated activity. One can no longer be reconciled with the specialists' practice of spending a great portion of the worktime in gathering various data from the road by telephone and in preparing rarely need papers on current matters. Often there is simply not enough time left for thoughtful analysis and the adoption of decisions on problems of technical progress in the branch. No one in the

administration is earnestly engaged in organizing managerial work, and no one cares about a well thought-out systematic approach to this matter. Thoughtful, creative work often is replaced by bureaucratic action.

It was noted that main-administration managers did not show due exactingness toward staff workers, and now and then they smoothed over sharpness when it was necessary to demand a strict accounting for the business at hand as a matter of principle. Such persistent forgivingness has led to a number of main administration specialists who had long been advanced workers in their posts slowing down in practice in solving important questions of technical progress in the railcar activity and hindering the introduction of valuable innovations. This testifies to neglect in the selection and assignment of personnel.

The collegium required that managers and all Railcar Main Administration workers restructure their work as quickly as possible in light of the high requirements that the Communist Party and Soviet Government have laid on the administration's staff today.

It was proposed that other MPS main administrations also draw serious conclusions from the review of this question that was made at the collegium's meeting. Radical improvement in the style and methods of work is a first-priority most-important task of the ministry's staff.

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CSO: 1829/253



## RAIL SYSTEMS

### ROLLING STOCK REPAIR MA MANAGEMENT SCORED

Moscow IZVESTIYA in Russian 10 Jul 85 p 2

[Article: "Only Miscalculations?"]

[Text] In the USSR People's Control Committee.

The committee examined the matter of serious deficiencies in the work of the Rolling-Stock Repair and Spare-Parts Production MA of the Ministry of Railways. The check established that many plants subordinate to the administration did not fulfill the plan for repairing passenger cars in 1984 and in January-May of this year. Last year they repaired 1,500 fewer cars than had been planned and a thousand units fewer than in 1983. Three-fourths of the plants did not meet their goals. Because of this, hundreds of passenger cars with out-of-order heating, ventilation and electrical-equipment systems, toilets and water-heating devices are traveling on the railroads, provoking numerous complaints by workers.

The main cause of this situation is unsatisfactory organization of production work. Progressive technology is being introduced poorly at the repair plants, and many operations are carried out manually. As a rule, the necessary backlog of spare parts for insuring steady work in the assembly departments has not been created. This causes lengthy idle time for cars being repaired and it engenders crash work. At the enterprises, 45-60 percent of the cars are released in the third 10 days of the month, and at some of them as much as 40 percent of the monthly program is met in the last 2 days of the month.

Repair quality often is low. Many components, structure and equipment remain unrepaired in cars that have been "cured."

The low level of production discipline influences considerably disruption of the plan and car-repair quality. During the past year and the first 4 months of this year more than 12,000 man-days were lost because of absenteeism at the plants that were checked. Much absenteeism is linked with drunkenness.

Managers of the plants that were checked, while not coping with the plan for car repair, performed work for outside organizations. Last year and in the first 4 months of 1985, output worth 5 million rubles was manufactured on the side at these enterprises. During this period, 1,500 tons of rolled metal and more than 500 tons of paint were squandered.

At some enterprises inflated reports and eyewash were manifest. Thus, at the Krasnoyarsk Electric-Car Repair Plant, the report of plan fulfillment was overstated by as many as 36 cars. Cases of inflated reports and eyewash were established also at the Novorossiysk and Zhmerinka plants.

All the deficiencies discovered resulted from the fact that the Rolling-Stock Repair and Spare-Parts Production Main Administration poorly monitored the plants' operations and did not pay enough attention to organizing passenger-car repair.

The main administration extends little help to enterprises in providing outfitting articles and equipment.

Despite the fact that much manual labor is done at many car-repair plants, the main administration has not managed to fully assimilate the resources allocated for rebuilding them. Proper measures for fulfilling the plan for constructing facilities for social and domestic-services purposes are not taken, leading to much personnel turnover.

The Ministry of Railways (the deputy minister is B. Nikoforov) does not properly assess cases where cars stripped of their outfitting are sent to plants.

For purposes of regulating the mutual relationships of car-repair plants and the railroads, "The Basic Terms for the Repair and Modernization of Passenger and Freight Cars" were put into effect in November last year. However, as the check established, this document is still being "forwarded" to the plants.

The committee has severely punished the guilty.

The announcement of Chief of the Rolling-Stock Repair and Spare-Parts Production Main Administration of the MPS P. Bortsov that managers who have permitted state-discipline violations, eyewash and inflated reports about the amounts of unfulfilled passenger-car repair and who have squandered centrally allocated materials will be called to disciplinary and pecuniary account was adopted as a matter of information.

The committee called the attention of the Deputy Minister of Railways B. Nikoforov to serious deficiencies in the work of the plants and railroads in organizing the repair of passenger cars and required him to take measures for eliminating deficiencies found by the check.

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CSO: 1829/253

## RAIL SYSTEMS

### CONTINUED PRE-WINTER COAL HAULING IMPROVEMENTS URGED

Moscow GUDOK in Russian 12 Jul 85 p 1

[Article under the rubric "Fuel Dispatch 'Whistle'": "The Winter Reserves are Being Created Today"]

[Text] In the first 10 days of July there was a 50,000 ton increase in the daily shipments of coal compared to the same period in the previous month. The plan was exceeded by 328,000 tons.

Since 8 July shipments of the fuel have been going especially well. This was the day the network began fulfilling an increased quota and are now exceeding it by 150,000 tons. The Northern, Lvov, Dnepr, and now the Krasnoyarsk railroad lines are maintaining stable operations. Between 6 and 10 July the Donetsk line exceeded the coal shipping quota by 138,000 tons and made up its shortfall. As of 8 July the Kemerov subdivision had also reached the quota level.

This success is primarily the result of a dramatic improvement in the supply of coal shipping lines with empty railcars according to traffic control schedules. One can honestly say that in recent days everyone has felt a sharp increase in adherence to schedule discipline. The chiefs of the October, Lvov, Moscow, South Urals, Transbaykal, and other rail lines that are delivering open railcars on schedule have demonstrated full understanding of the demands of the times.

The results that have been achieved, however, are reassuring, but they require further development and redoubling of efforts. We must not forget that the shortfalls in coal shipments are still high--717,000 tons. Unfortunately, not everyone in the railroad lines is genuinely concerned about this. And the proper scheduling steps are not being taken. The Odessa, Moldavian, North Caucasus, Azerbaijan, West Kazakhstan, Central Asian, West Siberian, East Siberian, and Far Eastern lines have accumulated major shortfalls and are still not meeting their quotas. The directors of some coal-shipping lines that have failed to meet additional plans for shipment of the fuel should also be reprimanded. These include the Baykal-Amur, North Caucasus, and Southeastern lines.

An alarming situation has developed on the Tselin line. In July the railroad fell short of its coal-shipping quota by 290,000 tons. Two thirds of the fuel

is lying at Ekibastuz primarily because of a sharp decline in the utilization of rolling stock by the "Ekibastuzugol" [Ekibastuz Coal] Production Association. In a 10-day period 2500 railcars were not put into operation on schedule. The norm for railcar turn-around time is 11.7 hours, but here it sometimes reaches 20-22 hours. This leads to long delays in the circle routes that provide the winter reserves of fuel at electric power stations.

One can hope that the USSR Ministry of the Coal Industry will draw some serious conclusions from this situation. The ministry should also take immediate steps to improve the operation of its "Sredazugol" [Central Asian Coal] and "Aleksandriyugol" [Aleksandriya Coal] production associations, which have disrupted the fulfillment of quotas by the Central Asian and Odessa main lines by failing to deliver the required quantity of coal.

Several days ago the Collegium of the Ministry of Railways, together with the chiefs of most of the railroad lines, reviewed the course of fulfillment of the decree by the USSR Council of Ministers "On Providing the National Economy and the Public with Fuel and Electrical and Thermal Power in the Fall and Winter of 1985-1986." They gave a fundamental evaluation of the administrators of the rail lines that are failing to provide the proper number of empty open railcars and to ship the proper amount of coal. Specific steps are being planned to improve operational work, to step up the unloading and movement of the railcar flow lines, and to strengthen schedule discipline. Special attention is being focused on stepping up work with the fleet of open railcars. The fate of fuel shipments and the creation of coal reserves for the winter now depend on the fulfillment of the goals that have been set.

9967

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## RAIL SYSTEMS

### SNOW REMOVAL EQUIPMENT NEEDED FOR RAIL OPERATIONS

Moscow GUDOK in Russian 9 Jul 85 p 2

[Article by D. Melnik, doctor of technical sciences, under the rubric "Lessons of Winter": "Why We Were Hindered by Snow"]

[Text] On the majority of our rail lines snow falls and there is freezing weather five to six months of the years. There is nothing unusual about this. But last winter train operations were disrupted and normal transport services for enterprises were interrupted. Why?

The snow removal operations at stations are still frequently based on manual labor, using shovels and brooms. This means that all the workers must participate in snow removal, and this often leads to serious disruptions in train traffic.

Scientific research was conducted in the 1950s and 1960s on the planning and utilization of forest protection zones and on electric heating units for switches, and new snow removal equipment was developed. The experience that had been gained should have been consolidated and developed. In 1972, however, at the initiative of the administration of the All-Union Rail Transport Scientific Research Institute (as strange as it may seem), the laboratory for the organization and mechanization of snow removal operations was closed. (In the interest of comparison, for example, in Japan problems of this nature are resolved at a special institute.) Technical literature on this problem has not been reprinted for a long time. New instructions for preventing snowdrifts have not been developed, and the old instructions on snow removal were published...in 1958 and are completely outdated..

Last winter railroad workers suffered a number of failures, especially at the stations. The following problem has been uncovered. Now junctions and large stations have been supplied with long snow-removal machinery. These machines consist of several open railcars, they have a large capacity, and they are meant to be used in depots. Under cramped conditions and due to their great length and poor maneuverability, these machines do not have the desired effect. In addition, about 40 percent of the station's territory is covered with hatches containing numerous switches and shunts, that is, these are typical cramped areas. This is where priority snow removal is needed, but there is still no special snow removal equipment for operating in hatches and other cramped spaces.

The snow laboratory (which was closed), in collaboration with the Planning and Design Bureau of the Central Administration developed just this type of machine back in 1971. It was a one-car, self-propelled snowplow that could pick up 100 cubic meters of snow per trip. It was tested successfully at the Moscow Railway Junction. Series production of the machine, however, was "frozen." The same thing happened to the electric heating unit for the switches. As already reported in GUDOK, this proposal was "forgotten" for no good reason, and preference was given to a snow-blower that in many cases failed to prove itself. We should return immediately to the electric heating unit and put it into operation.

These are the major problems and lessons of the past winter. They should be analyzed and steps should be taken to eliminate the shortcomings.

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## RAIL SYSTEMS

### POOR INDUSTRIAL RAIL WINTER PERFORMANCE ANALYZED

Moscow GUDOK in Russian 21 May 85 p 2

[Article by V. Andryushin, chief of the sidings department and deputy chief of the Commercial Administration of the central directorate of containerized transport and commercial operations under the Ministry of Railways, under the rubric "Lessons of Winter": "The Rear and the Flanks of Sidings"]

[Text] Analyzing the work that was done on sidings under last winter's difficult conditions, we need to return to the months that preceded that period. Both in the spring and summer the layover time of railcars was significantly higher than in 1983. That was the time from which the lessons should have been drawn. But many divisions and stations failed to do so. By the fall the utilization of railcars had improved somewhat, which was viewed by some as a turning point. September went well. October went well. Why then, should the situation deteriorate with the onset of winter? True, the forecast called for harsh weather. But, frankly, not everyone believes the forecasts. The Ministry of Railways received comforting reports.

But by November our indicators had already been "planted." And winter only brought bad reports. In December the frosts hit and snow fell. There was an increase in layovers exceeding the norm. We now are saying that winter uncovered the lack of preparation for winter by the transportation sections of industrial enterprises, the inadequacy of measures to prevent freight from freezing, and the inadequacy of facilities to return freight to a free-flowing state, and so on. As if we didn't know anything about this lack of preparation before!

The main point here is this. In 1984 the layover time norm for rolling stock was 6.87 hours, the actual average layover time was 7.83 hours, which represented an increase of 0.08 hours over the previous year. The loss of freight resources was almost 40,000 railcars higher than in 1983. Only two railroad lines met the layover time norm--the Belorussian and Lvov railroads. A total of 15 railroads, the Kemerovo, West Siberian, Central Asian, Alma-Ata, Tselin, Dnepr, and East Siberian railroads, had a poor layover time indicator. At the same time, we should mention the steady decline in actual layover time achieved on the Baltic, North Caucasus, Transcaucasian, Transbaykal, Baykal-Amur, and other railroad lines. It is clear that the climatic zones in which the railroads are located do not have an effect on these indicators.

Therefore, we must admit that in 1984 on many of the main railroad lines organizational work involving utilization of railcars on sidings was worse than in 1983, commanders took less responsibility, and the technological and labor discipline of the workers declined. All this had an immediate effect on cooperation with workers in related sectors.

And winter...Well, winter aggravated the shortcomings that had been carried over from last year. In a two-month period the layover time for railcars in the network increased by 0.41 hours compared to the same period last year, and it exceeded the norm by 1.52 hours. The over-all breakdown in unloading operations for which enterprises were responsible was more than 30,000 railcars per day.

Local party and soviet organs provided transportation units with a great deal of assistance during this difficult period, including assistance in resolving unloading problems. The government decided to award bonuses to workers in transportation shops for reducing the layover time of open railcars and tank cars. And even though the weather in February was no better than in January, more than 13,000 railcars were conserved during that month. There was a marked trend toward improved operations on sidings. A vivid example of the importance of organizational work with related enterprises can be seen in the Tayga Division of the Kemerovo Railroad. January was a total failure there, but in February such energetic efforts were made to improve unloading operations that in the 2-month period there was a 0.62 hour reduction in layover time compared to last year's indicator.

The difficult winter conditions not only brought failures, they also strengthened the cooperation between many collectives of industrial enterprises and rail transport. Worthy of special mention are the Mogilev Metallurgical Plant, the Gorkiy Motor Vehicle Plant, the Gorkiy Sorting Station, the North Omega Bauxite Mine and the Navolok station, and a number of others.

The Podgorenskiy Cement Plant has been making outstanding gains in the utilization of rolling stock for many years. All materials handling operations here are fully mechanized. Railcar layovers are always below the norm. There is genuine mutual understanding between Ivan Mikhailovich Peregudov, the plant's director, and Vladimir Semenovich Bazhan, the station chief. This means that the two collectives work in close cooperation. It is no coincidence that the first school in the Southeastern Railroad to teach the complex system for the effective use of railcars was held here. Even the weather this past winter did not affect the cooperative work of these two collectives.

Unfortunately, there are quite a few opposite examples to be found in the system. One of them is a source of particularly bitter feelings and is a cause for serious thought. The collectives of the Krivoy Rog Division of the Dnepr Railroad and the "Krivorozhstal" [Krivoy Rog Steel] Metallurgical Combine called on all the sidings workers to raise the level of industrial transport to that of main line transport. The workers in the two collectives had all the necessary means to do this. Suffice it to say that in the past 13 years 100 million rubles have been invested in the development of the combine's transportation services, and since the beginning of the five-year plan railcar



layover time has been reduced by 3.66 hours. A great deal can be learned from this type of cooperation.

This cooperation, however, showed signs of cracking during the harsh test of the unusual winter weather conditions. The difficulties that had to be overcome together sowed seeds of dissent among the workers in the two Krivoy Rog collectives, and as a result, they failed to meet any of their obligations to reduce layover time, and they did not even meet the norm. Apparently, something was overlooked in Dnepropetrovsk and Krivoy Rog, and the education factor was not taken into account. Now the initiators have to work hard to regain their positions and their authority, and to see that the planned school for advanced methods is held here just the same.

Only well-planned work, using progressive technology and vital forms of socialist competition, on sidings will bring the desired results. When the administrators of the Azerbaijan Railroad, who did not nominate one worker in the transport shop for a bonus in February, say that their layover indicators are not bad, they are knowingly refusing to improve these indicators. When the Transcaucasian and Baykal-Amur railroads do not introduce the complex system for the effective use of railcars, giving the excuse that their railcars are already used in accordance with norms, they lose reserves for increasing efficiency. The managers of the Central Asian Railroad give the excuse that their layover situation is not any worse than anywhere else and they stubbornly underestimate the Lvov method, while failing to seek any new methods on their own.

Experience shows that the complex system for the effective use of railcars, like any system, does a great deal to help conserve rolling stock. At this time 40 percent of all enterprises are operating according to this method. But problems are still arising that are our fault, that is, the fault of the railroad workers. We are failing to meet our obligations for priority delivery of railcars to those who are successfully conserving railcar-hours (especially on the Alma-Ata, Transbaykal, South Urals, and Northern railroads). We are providing little economic incentive for workers at enterprises to improve the utilization of rolling stock. There is a government decree and a minister's order regarding this issue, but the Donetsk, North Caucasus, Moscow, Azerbaijan, and West Kazakhstan railroads are moving slowly to carry out these orders.

There are serious shortcomings in the revision of contracts for the delivery and clean-up of railcars and the utilization of sidings, and in the development and introduction of unified technological processes. On the whole these plans are being exceeded (11,100 contracts have been signed instead of 11,000, and 318 unified technological processes have been developed instead of 303). However, often the turn-around time under the new conditions is the same as before and other indicators are not in line with progressive levels. For example, the Transcaucasian Railroad "revised" four unified technological processes and in all four the technical standards remained the same. The ministry instructed the railroad chiefs personally to monitor the development of unified technological processes and to consider discrepancies involving these processes.

As far as the development of transport shops at enterprises is concerned, only 73 percent of the funds allocated for this purpose in 1984 were utilized.

There is a large gap between main line and industrial transport at the Komsomolsk Thermal and Electric Power Station No 2, at the Sredneuralsk Copper Smelting Plant, the Semipalatinsk Canned Meat Combine, and many other enterprises that are involved with our stations. Only two railroad lines, the Gorkiy and Transbaykal, have managed to fulfill almost all their obligations in this area.

In March and April the situation improved noticeably, and in May it is continuing to improve. And once again someone could draw the wrong conclusion: the weather is helping. The help is coming from the set of organizational and technical measures that were carried out in a flurry of activity in February and March. We must establish a smooth rhythm for carrying out these measures. If we disrupt this rhythm, we will not develop and improve operations, and summer could turn out to be just like winter.

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CSO: 1829/258

RAIL SYSTEMS

BEVZENKO APPOINTED 1ST DEPUTY MINISTER OF RAILWAYS

[Editorial Report] Moscow GUDOK in Russian 12 September 1985 announces on page 3 the promotion of Albert Nikolayevich Bevzenko from deputy to 1st deputy minister of railways. He replaces Fedor Iosifovich Shuleshko, who is retiring. The announcement of Shuleshko's retirement was alluded to earlier in a 7 July 1985 article on page 2 of IZVESTIYA. Bevzenko, who was born in 1937, graduated from an institute in 1959 with qualifications as a railroad engineer/mechanic. In 1977 he moved from the post of deputy chief, West Siberian Railroad, to become deputy chief, Locomotives Main Administration. Before becoming a deputy railways minister in August of 1984, Bevzenko served as 1st deputy chief and chief of the Technical Main Administration.

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## MARITIME AND RIVER FLEETS

### MARITIME FLEET MINISTER ON SECTOR'S CURRENT STATUS

Moscow VODNYY TRANSPORT in Russian 6 Jul 85 pp 1-2

[Article by Minister of Maritime Fleet T. B. Guzhenko: "On the Course of Scientific and Technical Progress"]

[Text] From the report of Ministry of Maritime Fleet T. B. Guzhenko at the ceremonial meeting devoted to Maritime and River Fleet Workers' Day.

This year the seamen, river workers, port workers, ship repairmen and all water-transport workers are greeting their holiday with a feverish pitch of socialist competition in fleet and shore collectives. Among water-transport workers' affairs today are their unanimous approval and support for the decisions of the April and July 1985 Party Central Committee Plenums, the Third Session of the USSR Supreme Soviet and the June meeting of the CPSU Central Committee on Questions of Accelerating Scientific and Technical Progress and a striving to complete the five-year plan period successfully and to greet the 27th CPSU Party Congress with new labor achievements.

Last year, which marked the maritime fleet's 60th anniversary, the branch met the goals for 1984 and for the first 4 years of the five-year plan and over-fulfilled them.

It is comforting to note that last year maritime transport reduced prime operating costs for haulage by over 1 percent more than planned and by 4 percent for loading and unloading operations, and expenses per ruble of commodity output for ship-repair enterprises were reduced by 1.8 percent. The plan for profit was fulfilled by 101.5 percent for the basic (operating) activity.

Last year Russia's river-fleet workers delivered above the plan more than 6 million tons of the national economy's cargo, and, during the first 4 years of the five-year plan period, more than 25 million tons.

River steamship lines delivered to the national economy 55.5 million tons of power-engineering fuel cargo in 1984, about 70 million tons of timber and 350 million tons of construction cargo. The important tasks on bringing cargo to parts of the Far North and Arctic were fulfilled completely.

And although the start of the current year was not easy--nature presented us with no few unpleasant surprises--the results of the enterprises' efforts enabled the following to be claimed with confidence: water-transport workers will not only eliminate a lag where it exists but will also complete worthily the tasks for 1985 and for the five-year plan period as a whole.

Substantial qualitative changes have occurred in Arctic navigation: the 1984 navigation season was marked by a greater degree of organization and by improved--and in some cases by creative--use of advanced equipment and technology. All this has enabled all the cargo presented to be delivered to its destination in shorter periods and USSR Gosstaba's goals to be met.

A number of bright pages were written last year in the history of arctic navigation. Among them were the singular voyages of the ships "Kola," "Kandalaksha" and "Arkhangelsk" from Vancouver to Klaypeda through the Northern Sea Route, enabling the trip's time to be reduced by 6 days in comparison with the traditional route--through the Panama Canal--and it also greatly reduced operating expenditures.

Voyages of our ships from Japan and Italy to the Ob Gulf with large-diameter pipe for the builders of the Urengoy-Central Economic Region gas pipeline brought very great national economic benefit: the coordinated work of maritime and river workers enabled thousands of railroad cars to be released.

This year much work is to be done to effect the delivery of materials and equipment for the most northern gas and condensate field--the Yamburg. During the short arctic navigation season, the seamen and river workers are to deliver four times as much cargo as last year, under difficult weather conditions.

As is known, the maritime fleet plays a leading role in meeting the requirements of Soviet foreign trade, delivering more than 46 percent of the export and more than 70 percent of the import cargo of the USSR. Our ships will visit 1,100 ports of 125 countries during the year.

Import and export cargo is being hauled in combination--sea and river--navigation with great effectiveness.

In an environment of unstable international navigation, which is subject to crises, and of intensifying ideological struggle, Soviet seamen and river workers are successfully solving important production tasks, are worthily representing our state abroad, and are making a direct contribution to the matters of peace and mutual understanding and collaboration among peoples.

Our government unswervingly advocates collaboration based upon equality and mutual advantage in the area of international navigation, and it consistently defends the principles of free navigation. Despite recent attempts to unilaterally impose restrictive measures on the Soviet commercial fleet that certain circles in Western countries have undertaken in recent times, the fleet is being developed confidently in strict accordance with our country's requirements, with the growth of its foreign trade. No kind of sanctions or restrictions, revisions, false accusations, crises or vacillations of capitalist economics will frighten maritime and river transport, which works on a planned basis.

Relationships between the Soviet Union and the fraternal countries of socialist collaboration are being constructed successfully. Just as in other spheres, collaboration of CEMA member countries in the areas of water transport and navigation include the coordination of plans, the implementation of long-term specific programs for collaboration, and a number of other multilateral integrating measures. International competition among the water transport of the USSR and other collaborating socialist states are becoming increasingly wide in scope.

The successes that water-transport workers have achieved would have been impossible without further development of the materials and equipment base for maritime and river transport.

The maritime fleet numbers about 2,000 transport ships with a deadweight tonnage of almost 20 million. Among them--built to take account of the newest achievements of science and technology--are containerships, roll-on roll-off carriers, specially built LASH ships and ferries, "ecologically pure" "Pobeda"-type tankers, and multiple-purpose "Norilsk"-type motorship icebreaker-freighters, which have proved themselves to be excellent under the most difficult ice conditions.

The class leader of a new type of containership series, the "Mekhanik Zheltovskiy," which is to go into operation this year, was intended to support regular voyages to Dudinka. By the opening of the 27th CPSU Congress, the Leningrad shipbuilders will turn over a new nuclear-powered ship, the "Rossiya." The first icebreaker-type LASH-containership with a Sevmorput-type nuclear-power installation, which will be the largest dry-cargo ship of the Soviet transport fleet, is being built. This 260-meter giant will be able to take on board 74 lighters that weigh 500 tons each (with cargo).

During the current five-year plan the river fleet is being augmented by modern freight and more comfortable passenger motorships and by hydrofoils, ice-breakers and other special-purpose ships. The total tonnage of self-propelled freighters rose 15.6 percent, tankers 4.5 percent, dry-cargo barge tonnage more than 13 percent.

A characteristic feature of the intensive development of maritime transport during the 11th Five-Year Plan has been the further introduction of progressive transport-technology systems: containerized, palletized, ferry, LASH and other systems. The haulage of massive cargoes in large-load pusher barge trains, which will increase 26 percent during the five-year plan, are being introduced increasingly widely in the river fleet, and the use of positive-bending barge trains will increase 68 percent; for the delivery of vegetables and cucurbit-type crops, new types of vegetable carriers equipped with air-conditioning installations in the holds will be used more widely.

Persistent, rhythmic functioning of the transportation conveyor line is linked continuously with the creation of highly productive transshipping complexes for handling modern specialized ships and with the development of a materials base for integrated servicing of the fleet. During the first 4 years of the current five-year plan period, 19 specialized transshipping complexes were built or rebuilt in 15 maritime ports, and the ports' capacity rose by 13 million tons.

About 4 km of modern mechanized berths with a throughput of 4.5 million tons per year and more than 360 cargohandling machines, including continuous-operation machines for getting at and unloading free-flowing building materials, were put into operation at river ports. New river depots for passengers began to operate in 10 large cities.

Much attention is being paid to constant improvement of working and living conditions for water-transport workers and members of their families. Last year alone more than 450,000 m<sup>2</sup> of housing were built for them. The network of dormitories and enterprises for social dining and shopping is being expanded, polyclinics, recreation centers, kindergartens and nurseries are being introduced, sports structures are being developed, and the activity of libraries, clubs and other cultural and educational institutions are being improved and augmented with new acquisitions.

Experience dictates the necessity for qualitatively new approaches and ways for improving the whole economy and for converting it to the path of intensive development.

The party views a drastic acceleration of scientific and technical progress as the chief lever for intensifying the whole national economy, including water transport. Scientists and specialists of our scientific-research and design organizations and educational training institutions, rationalizers and inventors from ships' crews, and the collectives of ports and ship-repair enterprises are mobilizing their efforts in this direction.

Suffice it to say that in both the maritime and river fleets, the economic benefit each year from introducing scientific and technical achievements and advanced technology is 25-30 million rubles each.

However, today, as the June CPSU Central Committee meeting emphasized, this refers not simply to a higher growth rate for the economy but to a new quality in its development, to a decisive reorientation to intensive methods of economic management.

The collegia of Minmorflot [Ministry of Maritime Fleet] and Minrechflot [Minister of the River Fleet], the Presidium of the Central Committee of the Trade Union of Maritime and River Fleet Workers, and the ministries' party committees recently discussed the tasks advanced by the June meeting and planned ways for realizing them. Special attention was called to providing for a considerable increase in the share of expenditures on the rebuilding and reequipping of enterprises and a concentration of capital investment in the most important areas of the branch's economic and social development. In speaking about intensifying production in all elements, we should have in mind primarily a further rise in the operating effectiveness of the fleet, the ports and ship-repair enterprises, improvement of mutual relations among them and among the workers of related activities, a rise in plan and performance discipline, and the development of a more precise system for managing container, roll-on roll-off, ferry and LASH transport-technology systems, with the application, where desirable, of the arterial-and-feeder system of haulage.

In 1984 the first domestic LASH-transport technology system went into operation in the Far East. This year the Black Sea Steamship Line fleet was

augmented by another LASH ship of this type, the "Indira Gandhi," which will start hauling between ports of the Black Sea and countries of the Indian and Pacific Ocean basins. Small (8 and 6 "Dunaymore" lighters each) LASH ships have proved themselves well on their first voyages within the Soviet Dunay Steamship Line, and so have composite motorship-freighters of 10,000 tons each in the Volga-Kama basin.

In recent years the shape of modern specialized ships in the maritime fleet has increased greatly.

The transshipping complexes, using continuous-operation machinery, which were introduced at Medvezhyegorsk, Cherepovets, Astrakhan and Perm have enabled labor productivity to be increased 3-fold to 4-fold and the requirements for protecting the environment to be satisfied.

The June meeting of the CPSU Central Committee also emphasized that the main reserves for achieving higher effectiveness lie at the branch's junctions. For water transport, this is of special importance.

The experience of Leningrad's transport workers that was approved by the Party Central Committee has been introduced at 48 junctions based on maritime ports, which provide more than 90 percent of the branch's turnover, and at 62 junctions based on river ports.

The past indicates convincingly that the future in organizing our work belongs to this form of transport-process management. And the participants of the All-Union Conference on the Operation of Transportation Terminals, which met in Leningrad at the start of this year came to this conclusion unanimously.

Broader-scale coordination of the mutual actions of the workers of related activities--within the framework of whole transport-and-economic regions--was a further development of the Leningrad transport workers' initiative.

Organization of the port workers' labor is constantly being improved. In maritime transport today, brigade forms cover more than 95 percent of the dockworkers and mechanized-equipment operators, and 72 percent of them have been amalgamated into consolidated integrated brigades, which were created in accordance with the initiative of Hero of Socialist Labor A. Baranovskiy (Ilichevsk port), which was approved by the CPSU Central Committee. More than 70 percent of the dock workers are covered by the use of the labor-participation coefficient. River ports are also working actively in this area.

The work results of cost-accounting consolidated integrated brigades confirms the high effectiveness and promise of this form. For example, one of the brigades of the Tallin port, under Yu. Peskov, managed to reduce the gross berthing time of ships by 21 percent, to increase the estimated output per dock workers and mechanized-equipment operator by almost 30 percent and to strengthen discipline. The Minmorflot Collegium and the presidium of the trade union's central committee recently approved this experience, which it has recommended for the widest dissemination.

The consolidated Rostov river-port integrated brigade of N. Kostornykh, by widely introducing progressive technologies and precise work organization,



was able to report that it had fulfilled the five-year plan back on 9 May, and it committed itself to handling 1.6 million tons of cargo above the plan.

Ship repairers are to do much to raise the quality of and to reduce the time taken for repairing the fleet's ships, by raising the norms for average daily output, based upon certification of workplaces, and also by improving work organization through use of the contract method by brigades and superintendents' sections. The builders also face important tasks.

A subject of daily concern for each maritime seaman and river worker, ship repairman and builder, engineer and technician, white-collar worker and supervisor, of all ranks--from the blue-collar worker to the minister--should be the matters of savings and thriftiness, primarily the saving of power resources and raw and other materials. The strictest drive for savings should become the norm for the work of each laboring collective.

The nationwide movement for thriftiness and economical management is not a temporary campaign but one of the main prerequisites for successful solution of tasks for intensifying the economy. All this relates in full measure also to water transport.

The initiative of the crews of the motorships "Severodonetsk" of the Black Sea fleet and the "Konstantin Tsiolkovskiy" of the Latvian fleet, and OT-2053 of the Volga Amalgamated River Steamship Line on reducing the consumption of material, labor, fuel and power resources has received wide dissemination on maritime and river fleet ships. As a result of putting progressive organizational and technical measures and new technology for fuel preparation into practice, the norm for fuel consumption by all types of the fleet's ships in the branches was reduced by more than 5 percent in 1984. During the first 4 years of the 11th Five-Year Plan, maritime ships alone saved the national economy more than 300,000 tons of diesel fuel.

But it would not be correct to feel relaxed because of what has been achieved, since each percent of fuel saving by Minmorflot ships is counted in the sum of 4 million rubles. The proviso recorded in the maritime and river workers' socialist commitments--to work 2 days on resources that have been saved--should be not only carried out but also overfulfilled.

There is also a substantial reserve in insuring protection and conservation during hauling and cargohandling in ports and losses from accidents and breakage aboard ship and ashore, most of which occur because of violations of existing rules, discipline and technology.

As is known, it is people who provide for the success of any matter. Therefore, economic supervisors and party, trade-union and Komsomol organizations of the fleet and of shore collectives of water transport should constantly focus attention on the problems of the selection, assignment and training of personnel, systematic work on raising their skill levels, and strengthening labor, production and state discipline.

In maritime and river transport there is someone who can be taken as an example, someone to imitate. There are no few such people among waterways workers, especially in the collectives of those who initiated socialist competition, who give tone to the labor competition to fulfill ahead of time

the tasks for 1985 and for the five-year plan period as a whole. It is they who were the first in water transport to support the initiative of the Ukraine's and Belorussia's collectives, which proposed to begin the competition under the motto, "Give the 27th CPSU Congress 27 ten-day periods of shockwork!"

Among the right-flankers of the preCongress competition are the Black Sea Steamship Line, the Leningrad port, the crew of the motorship "Vladimir Ilich" of the Baltic Steamship Line, the dockworker brigades under Hero of Socialist Labor N. Tymun and Yu. Peskov, the collectives of the Volga Amalgamated River Steamship Line, the Omsk and Novosibirsk river ports, the Gorodets SMZ, and crews of the diesel-electric motor ships "Sovetskiy Soyuz" and "Volgo-Balt-129."

Recently we honored our veterans--participants of the Great Patriotic War. Many of them, going to deserved retirement, tirelessly performed, as before, major social work, and, being mentors of youth, transmitted their richest experience and knowledge to them. No few participants of the Great Patriotic War are right now laboring in production collectives. We rightfully call all of them our golden fund.

On the eve of our vocational holiday, the title of prizewinners of Soviet trade unions in the name of the first Stakhanovites of our branch, A. Petrushin and N. Chadayev, were conferred on 20 maritime and river fleet workers.

More than 100 heroes of socialist labor and winners of state prizes are right now toiling on ships and at water-transport shore enterprises. The labor of these and many other rightflankers of the 11th Five-Year Plan are convincing proof of the fact that the relay race of the veterans--the Stakhanovites, the shockworkers of the first five-year plans and participants of the Great Patriotic War--are in reliable hands.

In being compared to the rightflankers of socialist competition, maritime and river-transport workers are answering with specific deeds the party's call to complete the year 1985 and the 11th Five-Year Plan period worthily and to greet the 27th CPSU Congress with high labor achievements.

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MARITIME AND RIVER FLEETS

RIVER FLEET DEPUTY MINISTER ON CURRENT NAVIGATION SEASON

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 May 85 p 2

[Interview with RSFSR River Fleet Deputy Minister Ye. Kazantsev by M. Kazanskiy, special correspondent: "At High Water"; date and place not specified]

[Text] The navigation season is always a serious examination for watermen; especially today's: after all, this is the last navigation season of the 11th Five Year Plan. Practical experience of years gone by have brought out a number of negative factors, which reduce the effectiveness of the work of water transport. What is the state of affairs in the present year? Answering the questions of our special correspondent, M. Kaganskiy, is RSFSR Deputy Minister of the River Fleet, Ye. Kazantsev.

[Question] The extended winter season prevented the watermen from opening the navigation season on time. How did the delay affect the work of the branch?

[Answer] Quite frankly, it was bad. The navigation season was two weeks late. On many rivers, ice blocked the way to the open waters. And this had its effect on the results of the first quarter--the task was not fulfilled. In April, the delay was increased, and our indebtedness exceeded four million tons. But of course, it was not only a matter of a long winter. The Northwest, the Moscow, the Amur and the Yenisey shipping lines were not able to avoid the winter either; however, they were able to cope with the plan. In other words, it is also a matter of being organized, and a matter of high responsibility, which was found lacking in the managers of the other shipping lines.

[Question] What is being done to overcome the lag?

[Answer] First of all, we are repairing ships on a crash basis, and we are compressing the work schedules in order that the fleet does not delay the development of the navigation season. We are taking measures to staff the crews with specialists--captains, navigators, mechanics and seamen. Our main reserve is maximum use of the cargo capacities of the vessels. There was a lot of snow last winter, and the water level is high; thus the capability exists for this. Material and moral levers have been developed

for this at the shipping lines, in order that each dispatcher, each captain and each dock worker would have a material interest in increasing the ships' productivity. This is especially important today; the branch is obliged to eliminate the lag; to make up for the omissions; and to achieved the planned goals.

[Question] Many years of practical experience has shown that when the navigation season opens, not enough cargo has accumulated in the ports and at the ministries and departments of the consignors...

[Answer] Nor is the present year an exception. Stocks are accumulating slowly--worse than last year. We are especially concerned about the Port of Osetrovo, through which over 80 per cent of the packaged piece freight is received for Irkutsk Oblast and Yakutiya; and for the freight consigners' bases in Tobolsk and Salekhard, from which the oilmen of Tyumen and the gas workers of Yamburg are supplied. It is a rare ministry that doesn't turn out to be a debtor. But the most serious debtors are USSR Ministry of Geology, Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises], and Mingazprom [Ministry of the Gas Industry]. We have repeatedly informed Gossnab USSR about this, but for some reason these facts did not especially disturb them. And last year, because of the late freight buildup we were forced to carry cargo in the Fall. Sudden frosts literally trapped the ships in the ice, and the departmental disorder cost us dearly.

[Question] Things are speeded up greatly if the freight is sent in packets and containers. It was not for nothing that Gossnab USSR required the ministries and departments to send goods for the northern regions in such progressive packaging.

[Answer] If only it would also carefully ensure that its instructions are carried out! We built a container terminal in Osetrovo and equipped it with modern technology. You could empty the rolling stock without delay. But the terminal is practically idle. According to plan, every day 113 railcars with containers are to be received there; but only one-tenth as many are coming. A large portion of the freight comes in covered railcars, in bulk. And that is why the railcars are standing idle. Instead of unloading 170 rail cars in Osetrovo, they've only managed to empty a little over 100.

[Question] And the railroad workers are complaining that you are holding an abnormal number of railcars, and as a result there is not enough rolling stock. It is time to break out of this vicious circle, and make the transition from complaints to mutual assistance.

[Answer] Unfortunately, for now we seldom find a common language with our partners. Since last year they haven't picked up more than 2,000,000 tons of freight at the port warehouses. Scrap metal sits in Krasnoyarsk; lumber in Kotlas and Volgograd, and mineral-construction materials in many ports. The sole reason for this is the lack of railcars. But a lot of freight is gravitating to the waterways, and this freight is being transferred by rail.

We've proposed that the Ministry of Railways transfer to the rivers additional volumes of ore, coal, lumber, and petroleum products--because we have the necessary through-shipment capabilities. But they are "still studying the question." And time goes by.

[Question] Obviously it is not only a question of the railroad workers. The freight consignors prefer more rapid deliveries--via the steel mainlines. Moreover, the watermen are not completely coping with the obligations they've accepted, and they are leaving part of the freight overboard in the full meaning of the word.

[Answer] I can't disagree with that. We really were behind last year in shipments of animal fodder, fertilizer, and certain other kinds of products. We are not making sufficient use of our capabilities and reserves. In recent years the productivity of the fleet has been growing at a slow rate. It is being fitted out with modern equipment, but the proper yield is not there. To a large extent this is a result of the lagging rear services area, and primarily the repair bases. And technical and labor discipline is not at the proper level in all crews and shore service subunits... All these are our shortcomings, and we shall eliminate them.

Today the attention of the headquarters of the branch, of the communists at the central office and shipping lines, and that of all the services of river transport, is focused on increasing work quality and strengthening mobilization capabilities and discipline in the light of the decisions of the April CPSU Central Committee Plenum. In preparation for meeting the 27th Party Congress, the rivermen of Russia are applying all their efforts, knowledge and abilities, in order to successfully cope with the tasks of the year and of the five-year plan as a whole.

9006  
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## MARITIME AND RIVER FLEETS

### CEMA RIVER TRANSPORT OPERATIONS REVIEWED

Moscow RECHNOY TRANSPORT in Russian No 4, Apr 85 pp 23-24

[Article by S. Davydov of the MIIVT (Moscow Institute for Water Transport Engineers) and M. Chinenov of the USSR Gosplan (State Planning Commission) IKTP (Institute for Complex Transport Problems) under the rubric "The Course of Socialist Economic Integration": "CEMA Member Countries' River Transport"]

[Text] An economic conference of SEV [CEMA (Council for Mutual Economic Assistance)] member countries, at which the correctness and timeliness of the collectively developed policy on expanding cooperation and developing socialist economic integration was confirmed, was held in Moscow in June 1984.

Since 1950, the overall national income of CEMA member countries has become 8.3 times as great, gross industrial output 14 times as great and foreign trade exchange 30 times as great. At the present time, these countries are producing 33 percent of world industrial output, including 34 percent of machine building output, 32 percent of world chemical products production, 21 percent of the electrical energy generated throughout the world, 24 percent of the oil being produced, 32 percent of the coal, 35 percent of the natural gas, 32 percent of the steel being made in the world and 22 percent of world cement production.

One of the pressing directions [aims] of cooperation is accelerating scientific and technical progress as much as possible. To this end, an agreement was reached at the conference on joint development of a comprehensive program for scientific and technical progress over 15-20 years, which will serve as the basis for working out a coordinated scientific and technical policy.

The basic directions [aims] in the transport field are: Comprehensive development of shared transport connections which call for closer coordination of transport development plans, coordination of capital investments, and improvement of the planning system and transport conditions for foreign trade cargoes. In carrying out these tasks, widespread use of inland waterways and development of cargo carriages by water transport have great significance. In the future, water transport's share will grow and constitute about one-third of the overall volume of cargo carriages between CEMA member countries. In this process, the carriages, part of which will transit maritime sectors, will increase at accelerating rates, and consequently the delivery of cargoes in vessels of mixed river and sea navigation will grow.

The current stage of socialist economic integration's development is characterized by a tendency toward steady reduction in the proportion of basic bulk fuel and raw materials cargoes in carriages between countries, despite absolute growth in their volumes. In the future, an especially large increase in metallurgical and chemical industry cargoes is planned, and carriages of perishable cargoes will increase significantly.

The changes in the structure of cargo carriages between CEMA member countries make definite demands of river transport and, first of all, of new means of transport. The following basic directions [aims] may be discerned for further technical improvement of river vessels: Design and construction of specialized motor vessels, development of efficient design solutions in the area of creating new sectional vessels [articulated, pushed barge trains, normally with shaped bow sections] and greater capacity barge trains, widespread introduction of various modifications of flexing [izgibayemye] barge trains, creation of reliable coupling, towing [pushing] and mooring arrangements that are operationally convenient and require minimum expenditures of manual labor, improvement of the vessels' qualitative characteristics, increase in the reliability and efficiency of steering and propulsion systems, and creation of fundamentally new engines, more efficient under the current and prospective conditions of river navigation.

For the purpose of increasing the economic efficiency of vessels, measures have been planned, and will be implemented, to improve shipboard power plants (SEU): To augment their power, increase their reliability, improve their running characteristics, increase propeller KPD [efficiency (coefficient of useful action)], reduce the proportion of fuel consumed and labor expended on technical servicing and repair, and develop power plants running on non-traditional kinds of fuel (coal, waste oil, an oil and coal mixture, liquid and gaseous fuel from coal and shales, liquified gas).

For reducing the dimensions of shipboard power plants in CEMA member countries' river vessels, wider use is proposed of engines with high running-process parameters and devices for utilizing the heat of exhaust gases. At the same time, it is planned to reduce the number of equipment types being installed in the vessels. The agreement adopted in 1972, on multilateral international specialization and cooperation in producing vessels' fitting-out equipment, has facilitated this.

Implementing this agreement has permitted using the advantages of division of labor: to increase labor productivity, lower production cost and increase the series nature of production, and improve the economic efficiency of using new technology. As early as 1980, this afforded the opportunity to specialize the production of 39 equipment titles, which had included 63 types of shipboard equipment. Specifically, the volumes of reciprocal deliveries between the countries increased 2.7-fold in steering machines, 1.6-fold in windlasses, 6.3-fold in anchoring capstans, almost 5-fold in mooring capstans, almost 13-fold in mooring winches and 3.7-fold in light alloy lifeboats.

CEMA member countries also specialize in building certain types of river vessels, to wit: The NRB [People's Republic of Bulgaria] in dry cargo river vessels of 3,000-ton cargo capacity and river-sea type tankers of 5,000-ton cargo capacity; the VNR [Hungarian People's Republic] in river and maritime floating cranes of 5, 16, 25 and 32-ton lifting capacity, river pusher tugs of 1,470 to 1,690-kilowatt power and raft-moving tugs of 883-kilowatt power. The highest level of specialization is attained in building non-self-propelled river floating cranes of 16-ton lifting capacity and type OT [not further identified] pusher tugs of 1,470-kilowatt power. In the future, specialization is planned in building river towboats and pusher tugs of 880-2,200-kilowatt power and river and maritime floating cranes of lifting capacity to 100-140 tons.

The ChSSR [Czechoslovakian Socialist Republic] specializes in building bucket-ladder dredges with productivity of 50-450 cubic meters per hour, hydraulic [suction] dredges with productivity of 250-5,000 cubic meters per hour, vessels of mixed river and sea navigation of 2,700-ton cargo capacity and river passenger vessels. In the future there will be constructed a dry cargo fleet of vessels with cargo capacity to 3,000 tons, passenger and technical vessels, suction dredges and non-hydraulic dredges with productivity to 2,500 cubic meters per hour.

One of the important directions [aims] in developing the transport fleet is improving the efficiency of its operation by means of increasing cargo capacity and the size of pushed barge trains. The development of cargo carriages in vessels of mixed river and sea navigation retains its urgency, and it is planned to increase these vessels' cargo capacity to 4,500-5,500 tons. At the same time, for certain foreign trade cargo traffic, vessels of 2,000-3,000-ton cargo capacity, with lowered freeboard, will be developed.

Another direction [aim] in improving the operating efficiency of the river fleet is intensifying its specialization. To this end, it is planned to create vessels for carrying perishable products, cement and other powdered-form, heavy and bulky cargoes and liquified gases.

Taking into account the extensive possibilities for developing cargo carriages in Volga, Don and Dnieper-Danube communications, and the differing duration of the shipping season, it is envisaged to use icebreaking resources more widely, to create vessels of higher ice-transiting class, and also to implement measures for lengthening the operating period of vessel-passage structures and river ports.

Carriages of cargoes in container and lighter carriers will receive further development.

For the Rhine-Main-Danube and Danube-Oder-Elbe water transport connections, self-propelled vessels 90 meters long and of 1,500-ton cargo capacity will be created, and the operation of trains of two barges having an overall cargo capacity of 3,300 tons also is planned on the former connection and, on the latter, trains of two barges, each 82 meters long, 11.4 meters wide and having a cargo capacity of 1,780 tons.



Introducing the achievements of science and technology in river ports is aimed at increasing their processing capabilities in keeping with the rates of growth in volumes of cargo carriages, and also at reducing vessel handling times. In this connection, the following basic tendencies may be discerned in the development of port management: increasing the intensity of cargo operations, further developing the mechanized landing front, significantly enlarging storage areas, expanding the network of access and intraport railroad lines as well as the loading and unloading places for truck and railroad transport, and co-operating with allied kinds of transport and economic enterprises in building and using port facilities and equipment.

Enlarging the mechanized landing front will be carried out primarily through developing existing ports and building in them new districts and modern cargo-handling complexes, including those for working with heavy-cargo containers. Here, the number of port cargo-handling machines (cranes) must constitute, on the average, 2.5-3 units per 100 meters of landing front.

For handling bulk cargoes in river ports, specialized, high-production cargo-handling mechanisms will find broad application, including railroad gondola-car dumping facilities combined with rotary conveyer storage machines and conveyer loading machines, bucket elevator and rotary conveyer rigs and grab-bucket bunker load-handling machines.

Along with developing the material and technical base of the ports, the organization of their operation and the mechanizing of their labor will be improved by specializing ports, port areas and landings for handling particular kinds of cargoes having economically justified concentration in cargo traffic, by more extensive introduction of the means for comprehensive mechanizing of loading, unloading and supporting auxiliary work, by automating individual loading and unloading operations, and by introducing the automated management system (ASU "Port").

For the purpose of developing inland waterways and improving navigation on their already navigable reaches in CEMA member countries, it is planned to carry out a combination of route work and hydraulic-engineering construction, increase the provision of guaranteed depths for navigable routes, and make new routes navigable.

In the USSR, navigating conditions are being improved on the lower Don, and reconstruction of the Volga-Baltic Waterway imeni V. I. Lenin and the White Sea-Baltic Canal is in progress. In CEMA member countries, work on improving navigating conditions on the Danube and European inland waterways is continuing.

Improvement of the Danube Waterway consists of eliminating unfavorable navigating conditions in the Bratislava-Komarno sector, completing construction of the Rhine-Main-Danube navigating connection, and stepwise completion of the project for connecting the Danube with the Oder and Elbe. Upon completing the work, the European CEMA Member Countries' United Inland Waterways System will be created. It is proposed to carry out this project in two stages. In the first, connecting the Danube and Oder by constructing locks having the dimensions 190 X 12 X 3.5-4 meters is envisaged; in the second stage, connecting the Danube with the Elbe.

In the Danube-(Przherov) [49° 28' N, 17° 28' E] and Ostrava-Kozle sectors, it is intended to build low pressure [low head of water] locks, and in the (Przherov)-Pardubice and (Przherov)-Ostrava sectors high pressure locks.

In the Polish People's Republic, on the Wisla, a series of hydraulic engineering systems will be built, in result of which it will be possible to operate pushed barge trains of 3,500-ton cargo capacity over a 940 kilometer stretch.

Improving freight technology calls for closer interaction of the various forms of transport, reduction in labor requirements of the transport process and its individual operations, containerization and packaging of international freight, augmentation of mobile stock, routing of freight to take advantage of the creation of new and the development of existing regular shipping lines, specialization of transport technological systems for coping with heavy and constant flows of similar cargoes, and automation of the involved technological processes in transport units' movements and the handling of cargo.

The basic direction [aim] of scientific and technical progress in organizing river fleet work is automation of the individual management elements, creating special systems using EVM [electronic computers] for collecting and processing information on progress in completing cargo carriages, and extensive introduction of automated planning estimates systems and branch automated management systems.

Taking into account that transport is ranked among the largest consumers of energy resources, measures aimed at lowering its share of fuel expenditure are envisaged: Optimum increase in the cargo capacity of vessels and barge trains, improving vessel designs, further increasing the economy of power plants as well as reducing the energy expenditures in auxiliary operations, improving the quality of fuel and making use of new forms of it, improving organization of the transport process by applying the latest technical means, reducing the standing idle of mobile stock, and decreasing the expenditure of time on auxiliary work by means of automating labor-intensive processes.

In the field of environmental protection, the scientific and technical progress is aimed at lowering noise levels, reducing and entirely eliminating the harmful emissions of shipboard power plants and engines, and eliminating environmental pollution by cargoes.

The most important condition for uninterrupted and economical delivery of foreign trade cargoes is technological uniformity in the national means of transportation being used. In this connection, great attention is devoted to developing a coordinated policy in the countries in the matter of introducing achievements of scientific and technical progress into river transport. Implementation of the planned measures will promote an increase in the contribution of river transport workers to increasing the economic potential of CEMA member countries.

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MARITIME AND RIVER FLEETS

SHIPPING DEVELOPMENTS IN FAR EAST ECONOMIC REGION

Moscow VODNIY TRANSPORT in Russian 18 Jun 85 p 3

[Article by V. Antonenko, Khabarovsk staff correspondent, under the heading: "Scientific-Technical Progress": "Problem Reefs and Shoals"]

[Text] At a CPSU Central Committee meeting on questions of accelerating scientific-technical progress it was noted that: "At the same time, we must look at the tasks of science through the prism of the demands of the times--demands for decisively turning it to the needs of social production--to science." The all-union scientific-practical conference on "The Development and Distribution of Productive Forces and Transport Services for the Far East Economic Region to the Year 2005," which was held in Khabarovsk, is an example of such an approach.

When compiling sailing directions for the Gulf of Tartary in 1926, Japanese geographers added the following remarks: "Vanino Bay is a wasteland, and has no prospects whatever for the next 100 years."

But today I witnessed the initial loading of the steamship Okha, a modern icebreaker and multipurpose transport vessel, as it took on cargo at the mighty, highly-mechanized port here. It extended along the wharf for 174 meters as it took on containers in its holds. One; another; ten; a hundred... More than 15,000 tons of cargo was taken on board! And not one of the dockyard equipment operators pointed to the steamship as if it were the eighth wonder of the world--they've gotten use to it--even though one cannot help but gaze with admiration at this giant. A passenger elevator glides silently up its multistory superstructure; each member of the crew has his own cabin; there is a small recreation room, and even a sauna with a pool. And the central control panel reminds one of an electronic wonderland. Fear not O sailor--Fear neither night nor storm!

Against the background of the foreigners' prophecy, these features vividly testify to how mighty our Soviet fleet has become in the Far East Economic Region [DVER]. The shipping lines, equipped with the very latest kinds of vessels, with highly-productive port equipment and mechanisms, along with the work efforts of the sailors and rivermen have come to the forefront in their importance to the transportation system (TS), and are playing a large role in the creation of our country's Pacific Ocean economic base.

The fleet, as the materials from the conference stress, has become a specialized branch, bringing about the export of transport services, and making a most significant contribution to the overall value of the gross product of the DVER, in comparison with the other economic regions of the Soviet Union.

The significance of water transport in the development of the Far East's own productive forces is not exaggerated. For Kamchatka, Magadan and Sakhalin Oblasts, for example, the seagoing vessels are the only kind of bulk cargo transport for shipments of lumber, coal, equipment, foodstuffs and industrial goods, and petroleum products. Year in and year out the volume of the shipments is increasing for river shipping--on the Amur and Lena taken together.

In other words the maritime and river fleet is contributing to accelerating the overall development of the national economy of the Far East, to intensifying the economic and political influence of the USSR in the Pacific Ocean basin, to strengthening the defensive capabilities of our country, and to increasing the standard of living of the populace, and consequently implementing Project Okean for assimilating the natural resources of the World Ocean and its shelf.

Whatever one says, tasks of unprecedented scale must be solved; moreover, the way to the intended goals is full of reefs and shoals of problems.

The chief of these, as Academician N. Shilo, chairman of the presidium of the Far East Scientific Center of the USSR Academy of Sciences, stated in his speech at the forum of scientists and practitioners, is the disproportion between the capabilities of the fleet and the shore. For example, in recent times the tonnage of the river vessels has increased fourfold, but the length of the piers has grown by only a factor of 2.5.

Let's take the maritime fleet. One could still wish for a better ship-repair yard. To be specific, we managed to pay a visit to the Sov-Gavan Ship Repair Yard of the Ministry of the Merchant Fleet, where they are rehabilitating railroad ferries of the Sakhalin class, which provide services on the Vanino-Kholmsk crossing. G. Karabanov, director of the enterprise, and his leading specialists bitterly maintained that the yard is not suited for such purposes, and is thus far unable to take it upon itself to guarantee overall repairs to such vessels: neither the equipment nor the industrial facilities for such purposes exist. And that's why they are forced to "patch up" transports which are quite worn-out as best they can, in rough-and-ready fashion; and as they say--you won't get far on a lame horse.

The growth of ship-repair capacities at the Slavyansk, Nakhodka, Vladivostok and Petropavlovsk-Kamchatskiy and other ship repair yards must be in step with the rapid buildup of the fleet. The needs of the region's economy for vessels must consider specialization and the class of transport, especially for dry-cargo vessels capable of becoming an organic part of a progressive system for organizing the shipping process--container ships, roll-on-roll-off vessels, ferryboats and lighters.

The petroleum carrier, ice-breaker, technical and auxiliary service fleet must also be developed. And the question of operating air-cushion vehicles for water transport has been put on the agenda.

Among the most important measures pertaining to scientific-technical improvements at shore bases are erecting new ports on the coastline; completing construction of Vostochnyy Port and a second line at the Vanino-Kholmsk ferry crossing; and, reconstruction and expansion of the ports at Vladivostok, Vanino, Nakhodka, Magadan, Petropavlovsk-Kamchatskiy, and those on Sakhalin Island.

In a word, quite a few problems were identified, and here one cannot get along without state aid. Indisputably, such aid exists and will be forthcoming. But the conference was not called a scientific-practical conference for nothing. The reports and speeches contained a great many constructive proposals, and they pointed out what sort of reserves must be put into operation in order that water transport may more effectively take part in implementing the overall regional goals of an economic nature: today; tomorrow; and in a year.

Effective interaction with related kinds of transport, along the lines of the experiences in Leningrad, must be the chief cornerstone of the work of the seamen and rivermen. Apparently the NPGRTU [expansion unknown] method should be integrated into the transport-economic system of the DVER, as was done for example in the Black Sea-Dnepr, Azov-Volga, Transcaucasus, and Baltic transport-economic regions. It would be especially useful, like a spoon at dinner, to introduce ACS [Automatic Control Systems] to the transport process in the DVER on the basis of the existing Far East Railroad-Port of Vladivostok automated control system. Academician A. Aganbegyan spoke of this in great detail at the conference.

"We must also strive for maximum development of process flow charts for transportation," said Doctor of Technical Sciences V. Kostyukov, deputy director of Soyuzmorniiproekt [State Planning-Designing and Scientific Research Institute for Maritime Transport, USSR Ministry of the Maritime Fleet], as he shared his thoughts. "For example, experiments in door-to-door shipments were carried out at the Port of Vanino. They themselves organized the packaging of the lumber, and at first proposed handling 300,000 tons of freight in this manner; but the amount turned out to be double owing to growth in labor productivity. By virtue of innovations, it was possible to organize an additional line operation to Magadan..."

Introducing flow charts in support of loading and off-loading operations where there are no docks, and discharging cargo on shores with no equipment and at places with little freight turnover; container and packet shipments, especially for the northern oblasts; organizing the Vanino-Magadan ferry crossing; a common language between the seamen and rivermen at the places where their branches intersect; more energetically transferring freight from rail to river transport; construction of modern departmental docks for industrial enterprises; conducting dredging operations--these and many other proposals were reflected in the recommendations of the representative forum.

One must not bypass the section of the Far East comprehensive program on the problems of the economic development of the biological resources of the seas in the Far East and the Pacific Ocean where, it goes without saying, one cannot do a thing without the fleet. And their aim is so good that in the last few years alone, the Dalryba All-Union Fishing Industry Association accounted for 45 per cent of the total national catch.. But here is where the disproportion between the fleet and the shore base became acute. The shortage of processing, refrigeration, and ship-repair capacities, and the need for improvements in port and transportation facilities became a basic drag on the development of the fishing industry complex of the Far East. Intensive development of the social infrastructure must also become a top-priority question for the USSR Ministry of the Fishing Industry.

The shipping lines of the Far East have been summoned to expand their role in increasing the export potential of the region, as part of the USSR's cooperation with the countries of the Pacific Ocean Basin.

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MARITIME AND RIVER FLEETS

BREAKDOWN OF USSR MARITIME MERCHANT FLEETS AS OF 1 JANUARY 1985

Moscow MORSKOY FLOT in Russian No 6, Jun 85 p 8

[Text] The USSR Registry reports the status of the USSR Maritime Fleet, with breakdown of the data by ministries and departments as of 1 January 1985 (including self-propelled ships with gross register tonnage of 100 reg. tons or more):

TYPES OF SHIPS	Ministry of the Maritime Fleet			Ministry of the Fishing Industry			Others			In All		
	Количество судов	Водоизмещение, рег. т	Дедвейт, т	Количество судов	Водоизмещение, рег. т	Дедвейт, т	Количество судов	Водоизмещение, рег. т	Дедвейт, т	Количество судов	Водоизмещение, рег. т	Дедвейт, т
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<u>Passenger and Passenger-Cargo</u>	202	644 158	188 258	9	6353	5383	69	26 113	4484	280	696 624	198 125
Including:												
Ferries	50	244 001	71 087	—	—	—	—	—	—	50	244 001	71 087
<u>Dry Cargo Ships</u>	1492	9 128 733	12 285 101	528	1 572 214	1 556 171	279	510 524	611 419	2299	11 211 471	14 452 691
Including:												
Timber Carriers	348	1 443 054	2 016 989	—	—	—	2	9628	13 540	370	1 452 682	2 030 549
Container Ships	52	490 488	496 204	—	—	—	—	—	—	52	490 488	496 204
RO-RO Ships	57	404 147	516 126	—	—	—	—	—	—	57	404 147	516 126
<u>Tankers</u>	306	4 206 337	6 418 407	101	233 405	292 836	7	20 998	24 778	414	4 460 940	6 736 021
Including:												
Oil Tankers	279	3 984 759	6 174 356	80	197 974	250 320	5	17 615	21 458	364	4 200 348	6 446 134
Gas Tankers	11	186 425	201 519	1	614	270	—	—	—	12	187 239	201 789
Chemical Ships	3	9345	9960	—	—	—	—	—	—	3	9345	9960
<u>Combination Carriers</u>	11	688 003	1 194 432	—	—	—	31	83 615	88 576	42	771 618	1 283 008
<u>Fishing Ships</u>	—	—	—	2644	3 504 436	1 944 736	7	3474	1627	2653	3 507 910	1 946 363
<u>Special Purpose Ships</u>	55	202 331	134 739	207	1 503 645	1 190 937	173	237 892	104 903	435	1 943 888	1 430 579
<u>Technical Ships</u>	203	191 229	152 326	29	17 723	8778	193	220 053	140 080	425	429 005	301 184
<u>Auxiliary Service Ships</u>	524	471 415	339 726	346	145 826	110 640	204	129 495	83 747	1074	746 736	534 113
Including:												
Tugboats	289	93 104	35 511	200	82 575	35 750	107	44 419	18 312	596	220 098	89 573
Icebreakers	37	235 988	105 104	—	—	—	—	—	—	37	235 988	105 104
<u>TOTAL</u>	2793	15 552 206	20 712 989	3844	6 983 822	5 109 481	963	1 232 164	1 059 614	7622	23 768 192	26 882 084

KEY: 1. Number of ships 2. Gross register tons 3. Deadweight tons

## PORTS AND TRANSSHIPMENT CENTERS

### IMPROVEMENTS IN MURMANSK, AZOV FLEET SERVICING SOUGHT

Moscow VODNYI TRANSPORT in Russian 18 Jun 85 p 1

[Article: "Proceedings of the Collegium of the Ministry of the Maritime Fleet and the Presidium of the Central Committee of the Maritime and River Fleet Workers Union"]

[Text] The Collegium of the Ministry of the Maritime Fleet and the Presidium of the Central Committee of the Maritime and River Fleet Workers Union discussed the question of improving comprehensive servicing of the fleet in the ports of the Murmansk and Azov shipping companies.

The decision noted that the Murmansk and Azov shipping companies have worked out and are putting into practice "Coordinated Plans for Measures Aimed at Further Improvements in Comprehensive Shore Servicing of Vessels and their Crews for 1982-1985." The technological plan-schedule for the processing and servicing of vessels is playing a more important role and this work is being planned in conjunction with the continuous plan-schedule of port operations and the continuous schedule of fleet operations. The "Transflot" services are now subdivisions whose services are used by the crews of Murmansk Shipping Company vessels and vessels under other departments, as well as by members of sailors' families.

Work is being done to improve and introduce new technological processes, and special attention is being given to the technology involving in the processing of specialized fleets.

In the first four years of the five-year plan there was a 20.3 percent increase in the over-all intensity of fleet processing at Murmansk Shipping Company ports, and a 56 percent increase at Azov Shipping Company ports.

There was a 13 percent reduction in nonproductive fleet layovers at Murmansk Shipping Company ports in 1984 from the 1983 level, and a 13.4 percent reduction at Azov Shipping Company ports.

Every year there is an increase in the number of vessels serviced by "Transflot" services at the shipping company ports; an average of 35,000 requests from vessels are received and fulfilled annually; sailors and their families receive over 100 types of different services, including services provided by "Transflot" (over 50 different types of services).



The services have created exchange funds for control and measurement instrument systems, fire extinguishers, and bed linens, sections have been organized for the testing and loading of cylinders, and for testing Jacob's ladders and slings; and in the emergency rescue, salvage and underwater technical work division a section has been created for underwater cleaning of hulls, and so on. There has been an increase in the fulfillment of crews' requests for freight tallying.

The shipping companies have done some work to improve the delivery of material, technical, and food supplies to the vessels, there has been an increase in the over-all level of organization of delivery of supplies on board ships without the crew's participation, and containerized delivery is now being introduced. Work is being done to improve the cultural and consumer services provided to the sailors and their families.

At the same time, however, the Collegium and the Presidium of the trade union Central Committee noted that there are still some serious shortcomings and unresolved problems in the organization of comprehensive shore services in the Murmansk and Azov shipping companies. Nonproductive fleet layovers are still high, including those involving specialized vessels, and "Transflot" services do not always place high demands on shore organizations that are responsible for fulfilling the fleet's requests. The services are still not doing enough to analyze the reasons behind long fleet layovers; they are doing a poor job of uncovering shortcomings in the work of the organizations servicing the fleet, and they are not showing the proper initiative in the campaign to reduce the time the vessels spend in port.

Fleet technical servicing bases of both the Murmansk and Azov shipping companies regularly fail to meet plan quotas.

In the freight control departments of the "Transflot" services there are still cases of errors in the tallying of freight by workers who receive and dispatch freight on behalf of the ships' crews, and the fleet's requests for tallying services are not being fully met. The fleet's demand for material and technical supplies and food is not being fully met either.

Containerization of food stocks delivered to Azov Shipping Company ships is being introduced slowly, and material and technical supplies are not being delivered to the storerooms of ships in the Murmansk Shipping Company or the Azov Shipping Company.

There are problems in the organization of leisure activities for the sailors and their families, and sports and health promotion activities are poorly organized.

The Collegium and the Presidium of the union's Central Committee have called on the managers of the Azov and Murmansk shipping companies to analyze the state of affairs in the fleet port services and to take effective measures to eliminate the shortcomings they uncover, and they have instructed the chiefs and chairmen of basin (republic) trade union committees of all the shipping companies to: take additional measures to reduce nonproductive fleet layovers

that are due to a failure to provide ships with a bunker and necessary supplies and food, delays in filling out freight and vessel documents, and so on; and increase the responsibility of all subdivisions participating in the comprehensive servicing of the fleet for promptly fulfilling all the requests of the ships' crews and maintaining a high level of service.

They should also make higher demands of the material and technical supply services and subdivisions of "Torgmortrans" [Commercial Maritime Transport Administration] with respect to the delivery of material and technical supplies and food and delivering these goods to the ships' storerooms; special attention should be given to improving the operations of the fleet technical servicing bases and strengthening their material and technical base, and measures should be taken to ensure maximum fulfillment of the fleet's requests for tallying import and export freight using the resources of the freight control departments of the "Transflot" services.

The Collegium and the Presidium of the trade union Central Committee have instructed the Transportation and Operation of the Fleet and Ports Main Administration and the Department for Working with Foreign Shipping Crews under the trade union Central Committee to organize and conduct a conference-seminar in the first half of 1986 to share the experience gained by the "Transflot" services and to discuss their goals for the further improvement of comprehensive servicing of ships and their crews in the 12th Five-Year Plan.

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## PORTS AND TRANSSHIPMENT CENTERS

### LENINGRAD PORT SEEKS INFORMATION MANAGEMENT SYSTEM

Moscow VODNYY TRANSPORT in Russian 18 Jun 85 p 2

[Article by VODNYY TRANSPORT correspondent V. Yeliseyev under the rubric "Telegraph-Telephone Exchanges: Experience and Problems": "Accuracy, Reliability, Speed--A Description of the the Information Exchange System for Freight Dispatchers and Freight Consignees"]

[Text] The Leningrad Transshipment Center has been operating for many years on the basis of a continuous plan-schedule of transshipping center operations--a reliable, practical, and mobile form of continuous planning. Expanding the sphere of mutual coordination, Leningrad port workers went even further--they established creative business contacts with the suppliers of export freight, the Volga Motor Vehicle Works and the Kama Motor Vehicle Works.

First, a preliminary plan is being developed at the port for shipping motor vehicles and obtaining vessels for this purpose. After this plan is coordinated with the Baltic Shipping Company, the "Avtoeksport" [Motor Vehicle Export] All-Union Association, and the USSR Ministry of Railways, a plan-schedule is drawn up, which is to be fulfilled by the Volga Motor Vehicle Works and the Kama Motor Vehicle Works.

As information on the shipment of motor vehicles accumulates, the motor vehicle manufacturers send reports to the port by teletype.

This information makes it possible to conduct regular practical analyses of the fulfillment of the plan-schedule. This is especially important in working with the Volga Motor Vehicle Works, which sends up to 40,000 passenger cars to the Leningrad maritime port every year.

V. Vecherik, chief of the port's information and computer center, said: "Intersectorial coordination is not standing still. Specialists from the port's information and computer center are now completing the development of the goal for the second computerization stage: 'Accounting at the port of motor vehicle equipment that is to be exported.' When the development of this task is completed and it is introduced into the computer system, the port's dispatcher service will have another effective electronic assistant that will know everything about the presence of motor vehicles in the port, the plan for new deliveries, the availability of ships to carry the motor vehicles, and much more."

Specialists in automatic control systems believe that intersectorial coordination with just the Volga Motor Vehicle Works and the Kama Motor Vehicle Works represents yesterday's thinking in terms of increasing the intensification of the transfer process at the port. There are still some improvements that can be made in intersectorial coordination, but today specialists see the main reserve for reducing the layover time of expensive vessels during loading operations at Soviet and foreign ports and for stepping up the movement of export and import freight from the dispatcher to the consignee elsewhere.

The idea of introducing a system at the Leningrad Commercial Maritime Port for exchanging information between the ports on the basis of direct, switchboard-free communications using a computer display dialogue system, came up about two years ago. O. Savin, first deputy chief of the Baltic Shipping Company, O. Terekhov, chief of the Leningrad Commercial Maritime Port, and V. Sergeyev, deputy chief of the fleet operation administration of the Baltic Shipping Company, were the initiators behind introduction of this idea.

A two-way communication system was set up between the dispatch offices of the Leningrad port and the European ports of Hamburg, Hull, Tilbury, and London.

Now the two-way exchange of operating information is carried out by means of data shown on the display terminal. What has been the result of this? There has been an increase in the intensity of operations of the maritime fleet and its ports and the quality of the transport process has improved.

This system has made it possible for there to be rapid exchange of bills of lading, freight manifests, and other ship and freight documents.

When a modern vessel is being processed it is necessary to write out between 100 and 1000 bills of lading. The possibility of errors being made when the documents are filled out by hand is immense. And what is the result of these errors? Such an error could result, for example, in sending part of the freight to the wrong port. This entails additional expenses for the shipper who has to pay for the reloading, storage, and new transport of the freight, and this results in large losses.

When computers do this work the possibility of errors of this type is reduced practically to zero. The speed at which information is transmitted from port to port along the lines of direct communication is simply fantastic.

But the most important thing here is not the speed at which the information is transmitted from port to port and not the guarantee of error-free information. The most important thing is that London (or Leningrad) receives the information on the cargo being shipped even before the ship leaves port. While the freight is en route, the consignee receives exhaustive information about the goods, which make it possible to prepare the moorage area, the proper equipment, dock worker brigades, and so on. As a result, there is a reduction in the time the ships must stay in port for loading operations. This means that the fleet is beginning to operate more economically and more profitably. It can now carry a

larger amount of freight in the same amount of time, and consequently, make a higher profit.

This system also makes it possible to cut the time that a loaded vessel must wait in port for the shipping documents to be filled out, and this takes between 5 and 7 hours.

The following question may arise: a rapid, reliable system for the exchange of information between Soviet and foreign ports is good, but how does this system relate to intersectorial coordination? There is a direct relationship. Hundreds of "Zhiguli" cars from the Volga Motor Vehicle Works reach the Leningrad port by rail, go on to the consignee, are loaded onto a ship and are sent on to the port of Hull. Thus, the exchange of information between the Leningrad and Hull ports can only work to strengthen intersectorial coordination.

But everything here is not quite as simple as it may appear at first glance. Here is what is complicated. Freight being shipped to Hamburg and London accounts today for only about one-tenth of the cargo handled at the Leningrad port. What about the rest?

In the near future the port's information and computer center will have to set up a similar direct two-way communication system for the rapid exchange of information with other European ports, such as Rotterdam, Antwerp, and Amsterdam. The next step is a system with Canadian ports, and then, with African ports.

Naturally, direct communications lines, high-speed electronic computer equipment, the training of skilled programming engineers, electronic engineers, and dispatchers requires the outlay of considerable funds. Of course, these outlays can be made. But will there be a return? Specialists have estimated that the economic effect from the operation of this information and communications system for one year with four European ports will be at least 280,000 rubles.

The Leningrad Commercial Maritime Port ships a large volume of freight to the Republic of Cuba. It would probably be wise to set up a direct communication system between Leningrad and Cuban ports. Specialists are already working on a Soviet-Cuban communication line. There are two different possibilities: use of a manmade satellite or the recording of all the freight information on a special magnetic cassette and then sending it to Cuba by airplane. Today there is already hope that one of these communications systems between the Leningrad Commercial Maritime Port and Cuban ports will be put into operation by the end of 1985.

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## PORTS AND TRANSSHIPMENT CENTERS

### LACK OF TECHNOLOGY IN 'INFLOT' AGENCIES CRITICIZED

Moscow MORSKOY FLOT in Russian No 5, May 85 p 48

[Article by V. Sukhov, supervisor, Il'ichevskiy "Inflot" Agency: "A Discussion: The Maritime Agency and Technological Progress"]

[Text] At the present time new equipment, progressive technological processes and methods of organizing production and labor are being widely instituted in the maritime fleet. Main engine control is being automated on ships, some electro-radionavigational instruments are giving way to other, more complete ones, computers and satellite radionavigation facilities are being installed, and the look of the ships themselves is changing. Changes are also coming about in the infrastructure of maritime transport, and ports have been unrecognizably transformed in the last 10-15 years. But technical progress, for some reason, has not touched the area of servicing the fleet. In fleet transport service and "Inflot" agencies the volume of work is growing larger through the years, but all the work is done in the old way, on old equipment. In an article by N. Sokolov, "Complex Service for Ships" ("MF", 1984, No 6), we were informed that the young affiliate of "Transflot" service at Yuzhniy Port still does not have a UHF station, and this presents certain difficulties. At the Il'ichevskiy "Inflot" Agency, such a station was installed just two years ago, although the agency needs a more powerful station that will provide communications with foreign ships bound for the ports of Yuzhniy and Kherson. Maybe the maritime agencies do not yet need satellite radiocommunications. But much needs to be done in order that they be technically up to the level of service that the modern fleet demands. And if there is sufficient information for this in "Inflot" agencies and transport fleet service units, then organizational and administrative technology is clearly lagging behind. There are not even enough keyboard calculating machines; here and there "feliges" are still not being used. Telephone answering machines and automatic secretaries are not apparent in offices.

A permanent increase in the level of technical equipment of the control apparatus is a substantial part of technical progress at any enterprise, including "Inflot" agencies and transport fleet service units. For this it is necessary periodically to develop and institute local organizational projects, either for each agency as a whole or for the separate sectors of activity of these enterprises.

For the preparation, processing and transmission of information within the agencies it would be good to bring in automatic machines of the videotape and electronic display types. In printing a text on videotape, it is recorded on a

magnetic tape and its image appears on a screen. This allows any changes to be implemented quickly. As soon as a page is completely typed, the videotape delivers an electrographic copy of it. Thirty pages of standard text fit on one cassette tape. The emergence of machine media, either perforated tape or magnetic tape, is a very substantial link in the organization of an efficient system of collecting, preparing and processing information. Whatever stages of mechanization and automation complex fleet service passes through, it is necessary to find a means of automating the control of these objectives and interconnecting it with the already existing automated control systems of "Port" and "Morflot".

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## PORTS AND TRANSSHIPMENT CENTERS

### CHIEF ON YAKUTSK PORT OPERATIONS, PROBLEMS

Moscow VODNIY TRANSPORT in Russian 2 Jul 85 p 2

[Article by G. Korobkin, chief of the Port of Yakutsk, under the heading: "At the Transport Centers": "Reserves in Interaction"]

[Text] The tasks set before the Lena rivermen are complex and responsible ones, whose successful execution will require total mobilization of the efforts of the collective of the Port of Yakutsk, and the use of all production reserves. The subunits of the port approached the start of the navigation season with a high degree of readiness: winter ship repair schedules were observed; crews and shore subunits were brought up to strength; and on the eve of the 50th Anniversary of the Stakhanovite Movement and the 27th CPSU Congress the people were filled with the determination to perform shock work, with total efficiency.

It would seem that under such favorable conditions there would be no cause for alarm and danger for the fate of the fulfillment of the state tasks. Alas, there is. For six years already the Port of Yakutsk has been operating according to the Leningrad method, and has been developing and improving the practice of interaction of subcontractors in the conditions of a transport center. Quite a bit has been done. A unified operational process has been established and introduced; a significant portion of the problems of prioritizing the handling of paperwork has been solved; and the structure of the freight area of the port has been improved as a result. And nevertheless things are still unsatisfactory.

Leading specialists at the port have carefully scrutinized the activities of our partners in the work of the transport center during the past navigation season. Without disregarding their own shortcomings--and unfortunately there are still quite a few--they are forced to state that there is as yet no unanimity. I shall cite some specific facts.

During the past season the freight area of the port was frequently turned into a long-term storage lot, on whose area up to 40,000 tons of freight of great importance to the national economy had piled up. This led to gross violations of safety standards, made transport traffic difficult, slowed



down the process of traffic handling at the port; and led to reducing the quality of the goods, and sometimes to the spoilage of cargo which had been brought to Yakutsk at the cost of great efforts by the rivermen. Year in and year out the plan for goods shipment by the direct method is not being fulfilled. The port has been put into the position of compiling ad hoc work plans for the shifts because the transport center lacks precise information about the arrival times of vessels and the type of cargos they carry. And quite often cargoes arrive without documentation, which does not make it possible to completely make use of assigned motor vehicle transportation.

We have an especially large number of complaints in this regard against our colleagues from Osetrovo and Tiksi. The transportation system suffers to a significant degree because of its final link--a base for the consignees. Gorpromptorg [City Establishment for Trade in Manufactured Goods], Gorpishchertorg [City Trade Organization for Trade in Food Products], Yakutsk-tsentrснаб [Yakutsk Central Supply Administration], Yakutskugol [Yakutsk Coal Administration]--these and many other powerful organizations, not to mention the other minor organizations, are operating according to the old methods, which completely ignore the colossal growth of freight traffic. The approach roads to their bases are, as usual, in unsatisfactory condition; there is not enough freight handling equipment; and the conditions for mechanization of operations are lacking. All of this has led to the state that last year enforced idleness of the fleet at the Port of Yakutsk amounted to over 200,000 ton-days because of abnormal delays in handling.

At the Yakutavtotrans [Yakutsk Motor Transport] Association, it has been three years already since a special subunit was established, which is supposed to carry out introduction of commercial operations, balance the accounts between the clients and the port, obtain funds on credit, expedite shipments, handle accounts, and supervise motor transport operation. However the status of the organization envisages that it should also help the clients to solve their production tasks. A special mechanized detachment has been called upon to work on this, and talks on establishing it have been going on for a protracted period. But nothing has changed. Moreover, the practice of receiving and dispatching freight is also far from perfect. The motor vehicle operators have practically no receiving and shipping agents, and that is why in case of damage in shipment it becomes necessary to recreate the goods, and send our own receiving and shipping agents to the clients' bases.

For a long time the port has been insisting that a transportation and shipping department be assigned to it from Yakutavtotrans facilities, which would permit eliminating a lot of the disagreements between the rivermen and the vehicle operators, and would increase the personal responsibility of the administrators for the work sector allotted to them.

In speaking of the problems of the transport center, one must not fail to speak of the fact that a great deal depends on the rivermen themselves, on the production organization, and on the state of labor and processing discipline. We are still faced with a lot of serious work in the light of this

and the decision of the April (1985) CPSU Central Committee Plenum. The programmed instructions which were expressed at the Plenum were received warmly and with interest in the Port of Yakutsk. And this is a pledge of security that everything planned for the future will be carried out, and that the problems of the Yakutsk transportation conveyer can and must be solved in the immediate future.

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PORTS AND TRANSSHIPMENT CENTERS

GRAIN SHIPPING PROBLEMS EXAMINED AT ROSTOV MEETING

Moscow VODNIY TRANSPORT in Russian 2 Jul 85 p 1

[Article by V. Zhivotkov, staff correspondent in Rostov-na-Donu, under the heading "On the Eve of the Harvest Season": "Incomprehensible Indifference"]

[Text] Recently, at the traditional annual conference in Rostov, responsible representatives of the Azov Sea the Volga-Don shipping company summed up the totals of their work for the past year and planned the course of their joint activities in the current navigation season.

The conference dealt frankly and demandingly with the problems facing each of the partners and showed a deep appreciation of them and readiness to come to the aid of the other in time of need.

The river shipping administrators were disturbed by a plan for shipping 400,000 tons of grain cargoes from seaports, which were not supported with the proper delivery orders from the grain procurement officers.

All the responsibility fell on the subcontractors--the rivermen and seamen.

Through their joint efforts, the two shipping lines managed to come to an agreement on transferring a portion of the grain flow at the Port of Zhdanov from the railroads to riverboats, which made it possible to ship out 140,000 tons of grain in May and June.

Officials at the Volga-Don shipping fleet transfer and traffic service were pleased with the planned shipment volume. At last it would be possible to show what the Don rivermen were capable of: during the second half of May they were required to deliver 60,000 tons of grain from Zhdanov to Saratov.

They organized a special integrated inter-basin line, on which they put eight vessels of the Volga-Don class. I. Bykadorov, captain-engineer of the vessel Volga-Don-203, was named senior officer of the line. The captains and crews of the vessels, together with the dispatcher service, carefully scrutinized the schedules and the operating system of the new lines from Zhdanov to Saratov (grain), and Syzran' to Ust'-Donetsk (coal). The rivermen urgently set about accomplishing the shipments.

But reality mercilessly cast them down from the heavens to the earth. The grain procurement officers set the conditions that the river vessels must arrive in Saratov at four-day intervals. But under such operating conditions the ships would, of course, be unable to ship the 60,000 tons of grain. And they did not do so; they delivered only 14,000 tons in all.

Repeated appeals by the administrators of the Volga-Don shipping company to the grain procurement officers--to expand the geographic area for the grain transshipments to the Volga, and to extend it to the grain receiving enterprises of Kuybyshev, Ulyanovsk, Kazan and other cities--did not get a favorable response.

The workers at the Port of Zhdanov were also among the losers. In transferring the cargo to river vessels, they were counting on sharply increasing the intensiveness of the grain transshipments. But what kind of intensiveness can there be if the river vessels arrive at the port at long intervals?

Here's one of the examples. A ship delivered 25,000 tons of grain to the Port of Zhdanov. Awaiting completion of fumigation the Volga-Don-227 was already standing at the port ready to go. And as soon as they gave permission to commence the transshipment, the river vessel, having been quickly loaded, was sent up the Volga. But you see by the time the next Volga-Don had arrived, four days later, the port workers had already loaded the grain into railcars.

And thus, from the very beginning the inter-basin integrated line became despirited, and died on the vine.

Massive transshipments of grain from the new harvest are ahead. Can it really be so that in this very important campaign the grain procurement officers will conduct themselves in this manner in solving the transport problems?

It must be pointed out that the thousands of tons of food products which are transferred from the railroad to the river vessels free up thousands of railcars, and make it possible to ship other goods via rail, which are awaited with impatience at the country's construction projects and enterprises. This will be the state's approach to the matter, and there must be no indifference here.

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## MISCELLANEOUS

### TRANSPORT CONSTRUCTION MINISTRY REVIEWS CURRENT PROBLEMS

Moscow GUDOK in Russian 26 Jul 85 pp 1-2

[Article: "Technical Progress Is the Foundation of Success: Expanded Session of the Ministry of Transport Construction Collegium"]

[Text] As already reported in GUDOK, an expanded session of the collegium was held on 19 July, at which ways were discussed for raising the technical level of transport construction and converting it as rapidly as possible to an intensive path of development; this is required by the decisions of the April (1985) Plenum of the CPSU Central Committee and the directions taken at the June conference in the party's Central Committee with regard to speeding up technical progress.

The report was delivered by the minister of transport construction, V. A. Brezhnev.

Taking part in the discussion of the question under consideration was the director of the All-Union Scientific Research Institute of Transport Construction, D. I. Fedorov, and the following chiefs: G. P. Solov'yev, Main Administration for Bridge Construction, B. L. Vuchetich, Main Administration for Mechanization of Construction, the following chief engineers: S. N. Vlasov, Main Administration for Tunnels and Subways Construction, N. A. Polishchuk, Main Administration for Railroad Construction in Kazakhstan and Central Asia, M. B. Levyant, Main Administration for Highways Construction, the following trust chiefs: I. N. Bandol', Moselektrotyagstroy, N. G. Grishko, Yugorgtrans-tekhstroy, M. V. Gontar', Tsentrostroymekhanizatsiya, Ye V. Basin, first deputy chief, Main Administration for Baykal-Amur Mainline Construction, N. N. Lavrent'yev, secretary of the Central Committee of the Trade Union of Railroad Transport and Transport Construction Construction Workers, A. A. Puzin, secretary of the Central Committee of Motor-Vehicle Transport and Highway Workers, P. V. Sobolev, director of the Mosgiprotrans Institute, and O. V. Morshteyn, deputy chief of the SKB [Special Design Office] of Main Administration for Construction Parts and Assemblies Production.

Likewise speaking at this session was Yu. A. Belyakov, sector chief of the Construction Department, CPSU Central Committee.

In the report by the minister of transport construction, V. A. Brezhnev, and the speeches by the participants in this expanded collegium it was noted that in the decisions of the April (1985) Plenum of the CPSU Central Committee and the directions given at the June conference in the party's Central Committee

the following extremely important task was assigned--to speed up scientific and technical progress. This task is regarded by the party as the main direction of economic strategy, as the chief lever for intensifying the national economy and raising its efficiency.

It is now not just a matter of increasing the growth rate but of the new quality of growth, of switching to the intensive track of development, of rapidly moving forward in strategically important directions, and of a profound restructuring of the economy. Herein we must make use of effective forms of management, organization, and provision of incentives for labor.

Capital construction and construction production are still lagging behind and do not satisfy the requirements of the national economy. Therefore, the problem of intensifying and raising efficiency has been very sharply posed by the party to this sector. We must sharply reduce the time periods of construction and achieve a situation whereby all the projects under construction correspond to present-day requirements both with respect to their technical level and with respect to their operational qualities.

But for this purpose it is necessary, first of all, to raise labor productivity so that in the very near future it will attain the highest world level. The pathway to this goal lies through the mechanization and automation of technological processes, the reduction of the proportionate share of manual labor, which is still extremely significant.

The shortcomings inherent in capital construction for the country as a whole are also characteristic of transport construction. In carrying out the total assignment with regard to the volume of construction-and-installation work and the introduction of basic capacities, during the four years of the five-year plan the Ministry of Transport Construction has completed 400 million rubles less than it was supposed to for the principal transport clients--the Ministry of Railways and the RSFSR Ministry of the River Fleet.

The assigned task with respect to growth of labor productivity has not been fulfilled: as compared with 15.8 percent in the plan, it grew by 9.2 percent during the four-year period. Nor has the state of affairs improved even now.

More than a third of the trusts regularly fail to cope with the plans with regard to volume of operations. Despite a constant increase in the capital-labor ratio and the machine-worker ratio among the transport builders, the capital-output ratio has fallen, and manual labor has been reduced extremely slowly. It is engaged in by about half of all workers. But in the following trusts: the Kuybyshevtransstroy (Comrade Golovchenko), Sevzaptransstroy (Comrade Fedorovich), Tsentrotransstroy (Comrade Pitskhelauri) the level of manual labor reaches 60 percent and higher.

There are major shortcomings in planning. Far from always are effective decisions applied, and many claims are filed against the quality of plans.

Within the Ministry of Transport Construction measures have been worked out which provide for improvement in the organization of production and labor, as well as a broad-based utilization of the latest achievements of science and technology, along with a sharp turn toward intensification of construction and

industrial production. It is planned to significantly increase labor productivity, reduce the consumption norms for metal, lumber, cement, and fuel-and-energy resources, and to cut down the time required for construction by a factor of 1.3--1.5.

In order to reach these milestones in railroad construction, it is necessary to introduce the comprehensive mechanization of track operations. We must significantly increase the industrialization of constructing residential, production, and public buildings, raise the level of pre-fabrication in conjunction with a sharp improvement in the quality of pre-fabricated parts and items. We must raise the pace of railroad electrification by a factor of 1.2--1.3 and reduce the expenditures of manual labor by a factor of 1.5 by means of comprehensive mechanization of these operations.

There are also unsolved problems and unutilized reserves in other types of operations.

The chief reliance is being placed on the scientific and technical renovation of production, on the basis of which we must achieve a substantial increase in the output of progressive structural components and high-quality materials. Here too is an area of work which has hardly been begun. Just last year, for example, builders were shorted in receiving large-panel home-construction parts by more than 180,000 square meters. Moreover, the degree of finish of the structural components being turned out in many cases does not meet present-day requirements and leads to large expenditures of labor at the construction site.

Furthermore, a one-percent rise in the level of pre-fabrication, for example, of apartment houses (at an annual volume of introducing 1.5 million square meters) and with a high degree of plant finish allows us to save as much as 18,000 man-days at a construction site. That is something worth actively struggling for!

While for the Ministry of Transport Construction as a whole the level of pre-fabrication amounts to no more than 45 percent, for housing it is even less. Hence it is obvious what enormous reserves for increasing labor productivity lie hidden merely in solving this problem.

We must adopt decisive measures in order to make fuller utilization of the capacities of the construction industry's enterprises. You know, at the Omsk, Apparathninsk, and Chita ZhBK [reinforced-concrete structural component] Plants, subordinate to the main administration for the Urals and Siberia (Comrade Sakun, chief), only 35--40 percent of the capacities are being utilized. The capacities of the Shimanovsk Combine have been mastered in an utterly unsatisfactory manner. We have been dragging out the mastery of the new capacities for many years: at the Kotlas Large-Panel Home Construction Plant, which was put into operation in 1980, only 22.3 percent of the capacity has been mastered.

The second very important direction for raising the technical level of production is the mechanization of construction. Transport builders have a powerful fleet of machines at their disposal, amounting to 25,000 units--excavators,

motorized graders, bulldozers, scrapers, boom cranes, as well as a large fleet of special machines. Production of units for small-scale mechanization is being expanded. Already this year 15 million rubles worth of them will be produced; this is 1.5 times more than in 1980.

During the current five-year plan alone more than 100 models of new and effective means of mechanization have been developed and adopted for industrial production, including a set of mobile track machines mounted on the T-158 tractor, designed for working on small-scale railroad construction projects, a drilling machine for digging pits under electric-line poles in rocky, frozen soils.

Nevertheless, today we cannot be satisfied with the status of all this work. The increase in the production of the necessary equipment for transport construction comes up against the lack of capacities, and they are being assimilated very slowly. Thus, at the plants under the Main Administration for the Mechanization of Construction introduced during the current five-year plan (Birobizhan, Shimanovsk, Tayshet, Komsomolsk, Zolotonosha) only 75--85 percent of the capacities are being used. Thereby losses extend to as much as 9 million rubles worth of the total volume of machine-building products.

An important problem of the present day is improving the quality of the machines being turned out. Unfortunately, it happens sometimes that they come out of the shop gates unfit for use.

In order to improve the quality of the machines being developed within the PKB [planning-and-design office] of the Main Administration for the Mechanization of Construction on the territory of the Odintsovo Test-Experimental Plant, at the direction of the ministry a division (range) for testing and finishing operations was organized.

In the immediate future it is planned to manufacture at the ministry's plants about 5,000 new machines and equipment of more than 100 descriptions. A standing commission has already been formed under the leadership of G. V. Falaleyev, which has been given the task of working out a five-year plan for the serial production of new equipment on the basis of organizing and developing intraministerial cooperation and specialization of production.

But the full yield from the intended measures for raising the level of industrialization and mechanization of transport construction can be obtained only by the end of the five-year plan. And for now we must obtain a substantial increase by means of instituting order, while increasing labor, technological, and statediscipline.

This reserve is extremely great. Merely the fixed losses of worker time last year amounted to more than 600,000 man-days. They are particularly great in the main administrations for railroad construction, headed up by Comrades Sakun and Zimting.

The skilful and effective use of the enormous fleet of machines and equipment is becoming one of the basic tasks of construction production. But up to now



the excavators, bulldozers, and truck-mounted cranes in many construction organizations have not been operated for more than 10 hours a day. Poor utilization of machines reduces to naught everything which has been provided by the renovation and expansion of the machine fleet. In order not to allow this to happen, we must introduce more broadly and more boldly the experience of the Uralstroy Mekhanizatsiya Trust and that of other progressive groups, where equipment is operating almost twice as much.

An enormous reserve for increasing the effectiveness of operations is hidden in improvements to be made in the quality of construction and industrial output. It is necessary to complete its certification in the following year and to sharply raise the level of products in the highest category. "Built by the Ministry of Transport Construction" and "Excellent"--these concepts must become synonymous.

An important reserve for raising the technical level of production is executing the plans for introducing new equipment. As of now, unfortunately, they are being carried out by only 65--75 percent.

The main line in improving the system of management and its organizational structure consists of deepening the specialization at all levels and, first of all, within the trusts. In due course the ministry already outlined a series of important measures: creation of specialized sub-divisions for track operations, construction of large-panel houses, the erection of engineering structures using new technologies. But these measures are being implemented too slowly.

On several occasions it has been noted that there is a high effectiveness and need for transport construction to consolidate the trusts. The problems of technical progress can be solved practically only in large trusts and sub-divisions having the possibilities for switching resources around.

A considerable portion of the information necessary for managing construction is contained in the planning-and-estimate documentation, but often in such a form that it is very difficult to extract it from there in order to prepare requisition applications for material-technical resources and to draw up schedules for production operations. The task of the developers of automatic planning systems is to ensure the issuance of planning-and-estimate documentation in a form which is suitable for use by the builders in preparing production.

From the scientific research institutes--the TsNIIS [Central Scientific-Research Institute of Transport Construction] and SoyuzdorNII [State All-Union Highway Scientific-Research Institute] we must demand developments of such quality and quantity that they indeed help the main administrations to raise the technical level of transport construction. It is necessary to overcome the divisiveness among the various links in the "research--production" chain. It is precisely with this goal in mind that, beginning next year, there will be a change in the procedure for planning scientific developments and the creation of new equipment.

The chief engineers must become the conduits of everything advanced and progressive which are provided by science and practical experience. Their

top-priority task is to ensure the high engineering preparation of facilities, the growth of labor productivity, and the reduction of the proportion of heavy, manual work, solving complex future problems rather than those of this moment. We must decisively eradicate the practice whereby chief engineers perform the role of expeditors at delivery facilities or other functions which are really not appropriate to them.

A large role in speeding up scientific and technical progress must be played by the innovators of production--the efficiency experts and inventors. The sub-divisions of the Ministry of Transport Construction have more than 34,000 efficiency experts; every year they submit more than 38,000 various proposals, and the average yearly economic effect from them is more than 93 million rubles.

To involve each member of a labor group in solving the problems of speeding up scientific and technical progress, economizing on materials and fuel-and-energy resources, elevating the quality of the products and improving the working conditions, as well as disseminating advanced experience--such is the important task of the party and trade-union organizations.

A significant and direct influence on scientific and technical progress and improving the organization of labor is exerted by brigade-type cost-accounting, material incentives, technically justified norm setting, and the scientific organization of labor.

The measures discussed and adopted by the collegium comprise the basic strategic trends of the ministry's work for solving the tasks set by the party and the government. This is just the beginning of a large-scale matter. Because, of course, what we are talking about here is a radical turning-point, a change in the profile of this sector.

Transport builders have at their disposal quite a considerable scientific and technical potential for increasing the effectiveness of its own production, a significant growth in labor productivity and savings on material-technical resources, an improvement in the utilization of production stocks, the quality of construction and production output.

And it is a matter of honor for everyone to utilize these reserves more fully and widely so as to completely satisfy the demands made upon the sector by the national economy.

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